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HEALTH AND SAFETY PLAN FOR GROUNDWATER AND SOIL SAMPLING AT SOLID  
WASTE MANAGEMENT UNITS 6 AND 7 NS MAYPORT FL  
7/1/2006  
TETRA TECH NUS

# **C**omprehensive **L**ong-term **E**nvironmental **A**ction **N**avy

CONTRACT NUMBER N62467-04-D-0055



Rev. 0  
July 2006

## **Health and Safety Plan for Groundwater and Soil Sampling at Solid Waste Management Units 6 and 7**

**Naval Station Mayport  
Jacksonville, Florida**

**Contract Task Order 0033**

**July 2006**



**Southeast**

**2155 Eagle Drive**

**North Charleston, South Carolina 29406**

**HEALTH AND SAFETY PLAN  
FOR  
GROUNDWATER AND SOIL SAMPLING  
AT  
SOLID WASTE MANAGEMENT UNITS 6 AND 7**

**NAVAL STATION MAYPORT  
MAYPORT, FLORIDA**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**


**Submitted to:  
Naval Facilities Engineering Command  
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**CONTRACT NUMBER N62467-04-D-0055  
CONTRACT TASK ORDER 0033**

**JULY 2006**

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## **1.0 INTRODUCTION**

This Health and Safety Plan (HASP) has been developed to provide practices and procedures for Tetra Tech NUS, Inc. (TtNUS) personnel engaged in soil and groundwater sampling activities at the Naval Station in Mayport, Florida (NS Mayport). Project activities will be conducted at Solid Waste Management Units (SWMU) 6 and 7. This work is authorized under the Comprehensive Long - Term Environmental Action Navy (CLEAN) contract, administered through the U.S. Navy Naval Facilities Engineering Command, Southeast as defined under Contract No. N62467-04-D-0055; Contract Task Order Number 0033. This HASP must be used in conjunction with the TtNUS Health and Safety Guidance Manual. Both of these documents must be present at the site during the performance of site activities. The Guidance Manual provides detailed information pertaining to the HASP as well as applicable TtNUS Standard Operating Procedures (SOPs). This HASP and the contents of the Guidance Manual were developed to comply with the requirements stipulated in 29 CFR 1910.120 (OSHA's Hazardous Waste Operations and Emergency Response Standard).

This HASP has been developed using the latest available information regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work at the site. The HASP will be modified if new information becomes available. Changes to the HASP will be made with the approval of the TtNUS Project Health and Safety Officer (PHSO) and the TtNUS Health and Safety Manager (HSM). Requests for modifications to the HASP will be directed to the PHSO, who will determine if the changes are necessary. The PHSO will notify the Task Order Manager (TOM), who will notify the affected personnel of changes.

### **1.1 KEY PROJECT PERSONNEL AND ORGANIZATION**

This section defines responsibility for site safety and health for TtNUS employees engaged in onsite activities. Personnel assigned to these positions will exercise the primary responsibility for the onsite health and safety. These persons will be the primary point of contact for any questions regarding the safety and health procedures and the selected control measures that are to be implemented for onsite activities.

- The TtNUS TOM is responsible for the overall direction of health and safety for this project.
- The PHSO is responsible for developing this HASP in accordance with applicable OSHA regulations. Specific responsibilities include:
  - i. Providing information regarding site contaminants and physical hazards associated with the site.

- ii. Establishing air monitoring and decontamination procedures.
  - iii. Assigning personal protective equipment based on task and potential hazards.
  - iv. Determining emergency response procedures and emergency contacts.
  - v. Stipulating training requirements and reviewing appropriate training and medical surveillance certificates.
  - vi. Providing standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
  - vii. Modify this HASP, as it becomes necessary.
- The TtNUS Field Operations Leader (FOL) is responsible for implementation of the HASP with the assistance of an appointed SSO. The FOL manages field activities, executes the work plan, and enforces safety procedures as applicable to the work plan.
  - The SSO supports site activities by advising the FOL on the aspects of health and safety on site. These duties may include:
    - i. Coordinates the health and safety activities with the FOL.
    - ii. Selects, applies, inspects, and maintains personal protective equipment.
    - iii. Establishes work zones and control points in areas of operation.
    - iv. Implements air monitoring program for onsite activities.
    - v. Verifies training and medical clearance of onsite personnel status in relation to site activities.
    - vi. Implements Hazard Communication, Respiratory Protection Programs, and other associated health and safety programs as they may apply to site activities..
    - vii. Coordinates emergency services.
    - viii. Provides site-specific training for onsite personnel.
    - ix. Investigates accidents and injuries (see Attachment I - Illness/Injury Procedure and Report Form)
    - x. Provides input to the PHSO regarding the need to modify, this HASP, or applicable health and safety associated documents as per site-specific requirements.
  - Compliance with the requirements stipulated in this HASP is monitored by the SSO and coordinated through the TtNUS CLEAN HSM.

Note: In some cases one person may be designated responsibilities for more than one position. For example, at the NS Mayport, the FOL may also be responsible for SSO duties. This action will be performed only as credentials or experience permits.

## 1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

<b>Site Name:</b>	<u>Naval Station</u>	<b>Client Contact:</b>	<u>Diane Racine</u>
	<u>Mayport, Florida</u>	<b>Phone Number:</b>	<u>(904) 270-6730 ext 208</u>
		<b>NAVFAC SE Contact:</b>	<u>Adrienne Wilson</u>
		<b>Phone Number:</b>	<u>(843) 820-5582</u>

**Scheduled Activities:** This activity will be divided into a multi-task operation, including specifically the task of groundwater sampling. Further detail on this and other site tasks can be found in Section 4 of this HASP.

**Dates of scheduled activities:** Site activities are expected to begin in August 2006 and continue quarterly for one year.

### **Project Team:**

#### **TtNUS Management Personnel:**

Gregory Roof

TBD

TBD

Matthew M. Soltis, CIH, CSP

James K. Laffey

#### **Discipline/Tasks Assigned:**

Task Order Manager (TOM)

Field Operations Leader (FOL)

Site Safety Officer (SSO)

CLEAN Health and Safety Manager

Project Health and Safety Officer (PHSO)

#### **Other Potential TtNUS Project Personnel:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Hazard Assessments (for purposes of 29 CFR 1910.132) and HASP preparation conducted by:

James K. Laffey



## **2.0 EMERGENCY ACTION PLAN**

### **2.1 INTRODUCTION**

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an emergency. Site activities will be coordinated with the client contact, Diane Racine. In the event of an emergency which cannot be mitigated using onsite resources, personnel will evacuate to a safe place of refuge and the appropriate emergency response agencies will be notified. It has been determined that the majority of potential emergency situations would be better supported by outside emergency responders. Based on this determination, TtNUS personnel will not provide emergency response support beyond the capabilities of onsite response. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. NS Mayport contact Diane Racine will be notified anytime outside response agencies are contacted. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(l)(1)(ii).

TtNUS will, through necessary services, provide the following emergency action measures:

- Initial stage fire fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Initial medical support for injuries or illnesses requiring basic first-aid
- Site control and security measures as necessary

### **2.2 EMERGENCY PLANNING**

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards are considered to be unlikely to be encountered during site activities. Nonetheless, to minimize and eliminate the potential for any emergency situations, emergency planning activities will include the following (which are the responsibility of the SSO and/or the FOL):

- Coordinating with local Emergency Response personnel to ensure that TtNUS emergency action activities are compatible with existing emergency response procedures. Base Fire Protection and

Emergency Services will be notified of scheduled events and activities. This is most imperative in situations where their services may be required.

- Establishing and maintaining information at the project staging area (Support Zone) for easy access in the event of an emergency. This information will include the following:
  - Chemical Inventory (of chemicals used onsite), with Material Safety Data Sheets.
  - Onsite personnel medical records (Medical Data Sheets).
  - A log book identifying personnel onsite each day.
  - Hospital route maps with directions (these should also be placed in each site vehicle).
  - Emergency Notification - phone numbers.

The TtNUS FOL will be responsible for the following tasks:

- Identifying a chain of command for emergency action.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Periodically performing practice drills to ensure site workers are familiar with incidental response measures.
- Providing the necessary equipment to safely accomplish identified tasks.

## **2.3 EMERGENCY RECOGNITION AND PREVENTION**

### **2.3.1 Recognition**

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. To adequately recognize chemical exposures, site personnel must have a clear knowledge of signs and symptoms of exposure associated with site contaminants. This information is provided in Table 6-1. Tasks to be performed at the site, potential hazards associated with those tasks and the recommended control methods are discussed in detail in Sections 5.0 and 6.0. Additionally, early recognition of hazards will be supported by daily site surveys to eliminate any situation predisposed to an emergency. The FOL and/or the SSO will be responsible for performing surveys of work areas prior to initiating site operations and periodically while operations are being conducted. Survey findings will be documented by the FOL and/or the SSO in the Site Health and Safety logbook, however, site personnel

will be responsible for reporting hazardous situations. Where potential hazards exist, TtNUS will initiate control measures to prevent adverse effects to human health and the environment.

The above actions will provide early recognition for potential emergency situations, and allow TtNUS to instigate necessary control measures. However, if the FOL and the SSO determine that control measures are not sufficient to eliminate the hazard, TtNUS will withdraw from the site and notify the appropriate response agencies listed in Table 2-1.

### **2.3.2      Prevention**

TtNUS personnel will minimize the potential for emergencies by following the Health and Safety Guidance Manual and ensuring compliance with the HASP and applicable OSHA regulations. Daily site surveys of work areas, prior to the commencement of that day's activities, by the FOL and/or the SSO will also assist in prevention of illness/injuries when hazards are recognized early and control measures initiated.

## **2.4            EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE**

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety or welfare of site workers. Specific examples of conditions that may initiate an evacuation include, but are not limited to the following: severe weather conditions; fire or explosion; monitoring instrumentation readings which indicate levels of contamination are greater than instituted action levels; and evidence of personnel overexposure to potential site contaminants.

In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the TtNUS FOL. Safe places of refuge will be identified prior to the commencement of site activities by the SSO and will be conveyed to personnel as part of the pre-activities training session. This information will be reiterated during daily safety meetings. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain at the refuge location until directed otherwise by the TtNUS FOL or the on-site Incident Commander of the Emergency Response Team. The FOL or the SSO will perform a head count at this location to account for and to confirm the location of the site personnel. Emergency response personnel will be immediately notified of any unaccounted personnel. The SSO will document the names of the personnel onsite (on a daily basis) in the site Health and Safety Logbook. This information will be utilized to perform the head count in the event of an emergency.

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate evacuation routes. As a result, assembly points will be selected and communicated to the workers relative to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site.

## **2.5 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT**

During any site evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. Decontamination will not be performed if the incident warrants immediate evacuation. However, it is unlikely that an evacuation would occur which would require workers to evacuate the site without first performing the necessary decontamination procedures.

TtNUS personnel will perform removal of personnel from emergency situations and may provide initial medical support for injury/illnesses requiring only first-aid level support. Medical attention above that level will require assistance and support from the designated emergency response agencies. Attachment I provides the procedure to follow when reporting an injury/illness, and the form to be used for this purpose. **If the emergency involves personnel exposures to chemicals, follow the steps provided in Figure 2-2.**

## **2.6 EMERGENCY CONTACTS**

Prior to initiating field activities, personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an accident. Table 2-1 provides a list of emergency contacts and their associated telephone numbers. This table must be posted where it is readily available to site personnel. Facility maps should also be posted showing potential evacuation routes and designated meeting areas.

**TABLE 2-1  
EMERGENCY REFERENCE  
NAVAL STATION  
MAYPORT, FLORIDA**

<b>AGENCY</b>	<b>TELEPHONE</b>
<b>EMERGENCY</b>	<b>911</b>
Fire Department	(904) 270-5333
Base Security	(904) 270-5583 or 5584
Base Medical Clinic (For life threatening emergencies only)	(904) 270-5444
Memorial Health Care Center (for other emergencies)	(904) 858-7500
Base Safety Department	(904) 270-5218
Site Point of Contact, Diane Racine	(904) 270-6730 ext 208
Public Works Trouble Desk (for problems with utilities)	(904) 542-2122
National Response Center	(800) 424-8802
Chemtrec	(800) 424-9300
Poison Control Center	(800) 222-1222
Task Order Manager, Gregory Roof	(904) 636-6125
Health and Safety Manager, Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer, James K. Laffey	(412) 921-8678

**When calling base telephone numbers from within the Base (i.e., from an on-base telephone), dial a zero (0) and the last four digits of the telephone number. For example, to contact the Base Medical Clinic dial 05444.**

## 2.7 EMERGENCY ROUTE TO HOSPITAL

For emergency care only, non-Navy personnel are permitted to go to the Base Medical Center.

Branch Medical Clinic  
NS Mayport  
Mayport, FL 32228

The Base Medical Clinic should be used for life-threatening emergencies only. It is located in Building 2104 on Massey Avenue.

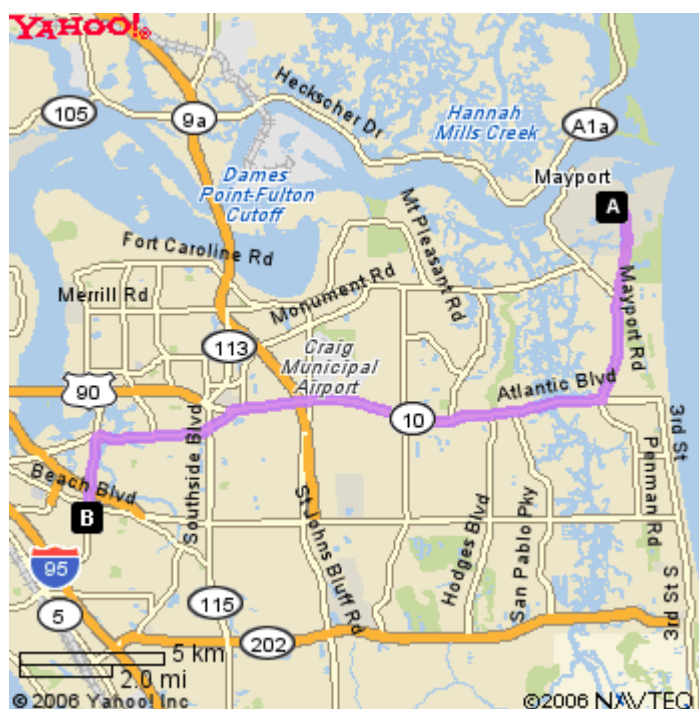
For non-emergency care services:

Memorial Hospital Jacksonville  
3625 University Blvd. South.  
Jacksonville, FL 32216  
Telephone: (904) 399-6111

Memorial Health Care Center will be used for medical care beyond basic first aid treatment. Directions to the Center: Exit base, take Mayport Road (A1A) to Atlantic Blvd.

Take a right onto Atlantic Blvd. across the Intercoastal Waterway go 10 miles. Turn left on University Boulevard and go 1.8 miles. The hospital is on the left. See Figure 2-1 "Route to Memorial Health Care Center".

**FIGURE 2-1**  
**ROUTE TO MEMORIAL HEALTH CARE CENTER**



## **2.8 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES**

TtNUS personnel will be working in close proximity to each other at NS Mayport. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations.

If an emergency warranting evacuation occurs, the following procedures are to be initiated:

- Initiate the evacuation via hand signals, voice commands, line of site communication, or vehicle horns. The following signals shall be utilized when communication via vehicle horn is necessary:

HELP	three short blasts	(. . .)
EVACUATION	three long blasts	(- - -)

- Report to the designated refuge point.
- Once non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the FOL (FOL will serve as the Incident Coordinator) pertinent incident details.

In the event that site personnel cannot mitigate the hazardous situation, the FOL and SSO will enact emergency notification procedures to secure additional assistance in the following manner:

Dial 911 (outside services) and call other pertinent emergency contacts listed in Table 2-1 and report the incident. Give the emergency operator the location of the emergency, the type of emergency, the number of injured, and a brief description of the incident. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

## **2.9 PPE AND EMERGENCY EQUIPMENT**

A first-aid kit, eye wash units (or bottles of disposable eyewash solution) and fire extinguishers (strategically placed) will be maintained onsite and shall be immediately available for use in the event of an emergency. This equipment will be located in the field office as well as in each site vehicle. At least one first aid kit supplied with equipment to protect against bloodborne pathogens will also be available on site. Personnel identified within the field crew with bloodborne pathogen and first-aid training will be the only personnel permitted to offer first-aid assistance.

As soon as possible Navy contact Diane Racine must be informed of any incident or accident that requires medical attention.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets (Attachment II) filed onsite. If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.



## **FIGURE 2-2 POTENTIAL EXPOSURE PROTOCOL**

The purpose of this protocol is to provide guidance for the medical management of exposure situations.

In the event of a personnel exposure to a hazardous substance or agent:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, shock.
- Transfer the victim to the medical facility designated in this HASP by suitable and appropriate conveyance (i.e. ambulance for serious events)
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- If the exposed person is a Tetra Tech NUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. The care of the victim will be monitored by WorkCare physicians. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 (enter Ext. 109), or follow the voice prompt for after hours and weekend notification, and be prepared to provide:
  - Any known information about the nature of the exposure.
  - As much of the exposure history as was feasible to determine in the time allowed.
  - Name and phone number of the medical facility to which the victim(s) has/have been taken.
  - Name(s) of the exposed Tetra Tech NUS, Inc. employee(s).
  - Name and phone number of an informed site officer who will be responsible for further investigations.
  - Fax appropriate information (e.g., MSDS) to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety (Matt Soltis) and Human Resources (Marilyn Duffy) Departments at 1-800-245-2730.

As environmental data is gathered and the exposure scenario becomes more clearly defined, this information should be forwarded to WorkCare.

WorkCare will compile the results of the data and provide a summary report of the incident. A copy of this report will be placed in each victim's medical file in addition to being distributed to appropriately designated company officials.

Each involved worker will receive a letter describing the incident but deleting any personal or individual comments. This generalized summary will be accompanied by a personalized letter describing the individual's findings/results. A copy of the personal letter will be filed in the continuing medical file maintained by WorkCare.

**FIGURE 2-2 (continued)**  
**POTENTIAL EXPOSURE REPORT**

Name: \_\_\_\_\_ Date of Exposure: \_\_\_\_\_

Social Security No.: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Client Contact: \_\_\_\_\_ Phone No.: \_\_\_\_\_

Company Name: \_\_\_\_\_

**I. Exposing Agent**

Name of Product or Chemicals (if known): \_\_\_\_\_

Characteristics (if the name is not known)

Solid      Liquid      Gas      Fume      Mist      Vapor

**II. Dose Determinants**

What was individual doing? \_\_\_\_\_

How long did individual work in area before signs/symptoms developed? \_\_\_\_\_

Was protective gear being used? If yes, what was the PPE? \_\_\_\_\_

Was there skin contact? \_\_\_\_\_

Was the exposing agent inhaled? \_\_\_\_\_

Were other persons exposed? If yes, did they experience symptoms? \_\_\_\_\_

**III. Signs and Symptoms** (check off appropriate symptoms)

**Immediately With Exposure:**

Burning of eyes, nose, or throat

Tearing

Headache

Cough

Shortness of Breath

Chest Tightness / Pressure

Nausea / Vomiting

Dizziness

Weakness

**Delayed Symptoms:**

Weakness

Nausea / Vomiting

Shortness of Breath

Cough

Loss of Appetite

Abdominal Pain

Headache

Numbness / Tingling

**IV. Present Status of Symptoms** (check off appropriate symptoms)

Burning of eyes, nose, or throat

Tearing

Headache

Cough

Shortness of Breath

Chest Tightness / Pressure

Cyanosis

Nausea / Vomiting

Dizziness

Weakness

Loss of Appetite

Abdominal Pain

Numbness / Tingling

Have symptoms: (please check off appropriate response and give duration of symptoms)

Improved: \_\_\_\_\_ Worsened: \_\_\_\_\_ Remained Unchanged: \_\_\_\_\_

**V. Treatment of Symptoms** (check off appropriate response)

None: \_\_\_\_\_ Self-Medicated: \_\_\_\_\_ Physician Treated: \_\_\_\_\_

### **3.0 SITE BACKGROUND**

#### **3.1 SITE HISTORY**

NS Mayport is in Duval County, Florida, and approximately 16 miles northeast of Jacksonville at the mouth of the St. Johns River. The base was established in 1942 and is primarily involved in the intermediate-level maintenance of equipment, ships, aircraft, and other support units stationed at the facility.,

#### **3.2 PROJECT SITES DESCRIPTION**

##### **3.2.1 SWMU 6**

SWMU 6 (The Waste Oil Pit and Sludge Drying Bed) is located within the northern part of NS Mayport near the southern shore of the St. Johns River. It was used from 1973 to 1978 to store bilge water that contained oily waste. It is believed that other items such as solvents and transformer oils may also have been disposed of in SWMU 6. SWMU 6 was triangular in shape and approximately 0.2 acre in size, and was excavated to a depth of approximately 6 feet bgs. Bilge water and oily waste disposed of in the unlined pit were allowed to seep into the underlying soil. It is estimated that 250,000 gallons of bilge water and several thousand gallons of waste oil were disposed of in SWMU 6. In 1979 it was filled and covered, and the four sludge drying beds (SWMU 7) were constructed.

##### **3.2.2 SWMU 7**

SWMU 7 (Oily Wastewater Treatment Plant Sludge Drying Beds) is located within the northern part of NS Mayport near the southern shore of the St. Johns River. It is located to the west of the Oily Wastewater Treatment Plant (OWTP) or SWMU 9. SWMU 7 was constructed in 1979 to receive and dewater sludge from the OWTP. Each sludge drying bed is approximately 150 feet in length and 50 feet wide, is unlined, and is enclosed by earthen berms approximately 8 feet above the surrounding land surface. The four sludge drying beds received sludge collected from the clarifier of the OWTP and from bilge water receiving Tanks 99 and 100 (These tanks are two of the 15 tanks that comprise SWMU 51).

## 4.0 SCOPE OF WORK

This section describes the project tasks that will be performed at NS Mayport. Additionally, each task has been evaluated and the associated hazards and recommended control measures are listed in Table 5-1 of this HASP. If new tasks are to be performed at the site, Table 5-1 and this section will be modified accordingly. Specific tasks to be conducted include, but are not necessarily limited to, the following:

- Mobilization and demobilization
- Multimedia sampling including
  - Groundwater
  - Soil utilizing Direct Push Technology (DPT)
- Decontamination of sampling equipment
- Investigative-Derived Waste (IDW) management

The above listing represents a summarization of the tasks as they apply to the scope and application of this HASP. For more detailed description of the associated tasks refer to the Work Plan (WP). If additional tasks are determined to be necessary, this HASP will be amended and a hazard evaluation of the additional tasks performed.

## **5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES**

Table 5-1 of this section serves as the primary portion of the site-specific HASP which identifies the tasks that are to be performed as part of the scope of work. This table will be modified and incorporated into this document as new or additional tasks are performed at the site. The anticipated hazards, recommended control measures, air monitoring recommendations, required Personal Protective Equipment (PPE), and decontamination measures for each site task are discussed in detail. This table and the associated control measures shall be changed, if the scope of work, contaminants of concern, or other conditions change.

Through using the table, site personnel can determine which hazards are associated with each task and at each site, and what associated control measures are necessary to minimize potential exposure or injuries related to those hazards. The table also assists field team members in determining which PPE and decontamination procedures to use based on proper air monitoring techniques and site-specific conditions.

As discussed earlier, a Health and Safety Guidance Manual accompanies this table and HASP. The manual is designed to further explain supporting programs and elements for other site -specific aspects as required by 29 CFR 1910.120. The Guidance Manual should be referenced for additional information regarding air monitoring instrumentation, decontamination activities, emergency response, hazard assessments, hazard communication and hearing conservation programs, medical surveillance, PPE, respiratory protection, site control measures, standard work practices, and training requirements. Many Tetra Tech NUS SOPs are also provided in this Guidance Manual.

The Safe Work Permits issued for site activities (See Section 10.10) will use elements defined in Table 5-1 as a primary reference. The FOL and/or the SSO completing the Safe Work Permit (See Attachment III) will add additional site-specific information. In situations where the Safe Work Permit is more conservative than the direction provided in Table 5-1 due to the incorporation of site-specific elements, the Safe Work Permit will be followed.

### **5.1 GENERAL SAFE WORK PRACTICES**

In addition to the task-specific work practices identified on Table 5-1, the following safe work practices are to be followed when conducting work on site. These safe work practices address a pattern of general precautions and measures for reducing risks associated with site operations. This is a partial list and may be amended as necessary.

- NO eating, drinking, chewing gum or tobacco, taking medication, or smoking in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists.
- A thorough shower and washing must be conducted as soon as possible if excessive skin contamination occurs.
- Avoid contact with potentially contaminated substances. Avoid puddles, pools, mud, or other such areas. Avoid, whenever possible, kneeling on the ground or leaning or sitting on equipment. Keep monitoring equipment away from potentially contaminated surfaces.
- Attend briefings on anticipated hazards, equipment requirements, Safe Work Permits, emergency procedures, and communication methods before going on site.
- Plan and mark entrance, exit, and emergency escape routes. See Section 2.0.
- Rehearse unfamiliar operations prior to implementation.
- Buddies should maintain visual or communicative contact with each other and with other on-site team members by remaining in close proximity to assist each other in case of emergency.
- Establish appropriate Safety Zones including Support, Contamination Reduction, and Exclusion Zones.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report injuries, illnesses, unsafe conditions, unsafe practices, defective equipment, and potential exposure incidents to the SSO.
- Observe coworkers for signs of exposure and heat or cold stress.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

## **5.2 DPT SAFE WORK PRACTICES**

The following Safe Work Practices are to be followed when working in or around the DPT Rig Operations.

- Identify underground utilities and buried structures before soil boring.
  - This service is provided by Sunshine State One-Call of Florida, Inc. 1(800) 432-4770.
  - Tetra Tech NUS personnel will use the Utility Locating and Excavation Clearance Standard Operating Procedure provided in Attachment IV.
- DPT rigs will be inspected by the SHSO or designee, prior to the acceptance of the equipment at the site and prior to the use of the equipment.
  - Repairs or deficiencies identified will be corrected prior to use.
  - Use the Equipment Inspection Checklist provided in Attachment V.
  - Inspection frequencies will be once every 10-day shift or following repairs.
- Check operation of the Emergency Stop Switch (initially, then periodically thereafter). See Section 5.2 concerning these testing of the emergency stop devices and the other required precautions.
- Ensure that machine guarding is in place and properly adjusted.
- The work area around the point of operation will be graded to the extent possible to remove any trip hazards near or surrounding operating equipment.
- The DPT operator will establish an equipment staging and lay down plan.
- Keep the work area clear of clutter and slips, trips, and fall hazards.
- Minimize contact with contaminated tools and environmental media.
- Potentially contaminated tools will be placed on polyethylene sheeting for storage and wrapped for transport to the centrally located equipment decontamination area
- An individual must be designated with the primary responsibility of operating the kill switch mechanism. Also, the DPT operator must verbally announce each time the soil boring mechanism is activated. See Section 5.2.
- Support functions (sampling and screening stations) will be maintained a minimum distance from the DPT rig of the height of the mast plus five feet or 25-feet what ever is greater.
- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the DPT rig.

- Only use manufacturer provided/approved equipment in conjunction with the DPT operation.
- Only personnel essential to the work activity will be in the exclusion zone.
- Equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the FOL and/or the SHSO to determine cleanliness prior to moving to the next location, exiting the site, or prior to down time for maintenance.
- Motorized equipment will be fueled prior to the commencement of the day's activities.
- When not in use DPT rigs will be shutdown, and emergency brakes set and wheels will be chocked to prevent movement.

Work areas will be restored to equal or better condition than original found in order to remove any contamination brought to the surface and to remove any physical hazards. In situations where these hazards cannot be immediately removed, the area will be barricaded to limit access.



TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAVAL STATION, MAYPORT, FLORIDA

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SSO require.)</i>	Decontamination Procedures
Mobilization/ Demobilization	<p><i>Physical Hazards</i></p> <p>1) Slip, trips, and falls 2) Vehicular (Base) traffic 3) Ambient temperature extremes (heat stress)</p> <p><i>Natural hazards</i></p> <p>4) Insect/animal bites and stings (including fire ants and Eastern diamondback rattlesnakes) 5) Inclement weather</p>	<p>1) Preview work locations for unstable/uneven terrain. 2) Traffic and equipment considerations are to include the following: - Establish safe zones related to traffic - All activities are to be conducted consistent with the Base traffic requirements. 3) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress is provided in Section 4.0 of the HSGM. 4) Avoid potential nesting areas of biting/stinging insects and snakes. Use commercially available insect repellents. Wear appropriate clothing, including snake chaps where warranted. Tape ankle and wrists areas to prevent fire ants, ticks, chiggers, etc. from attaching themselves to you skin. Wear light colored clothing so that biting insects can be easily visible and be removed. Follow directions as specified in Section 6.3 and Section 4.0 of the Health and Safety Guidance Manual concerning natural hazards. 5) Suspend or terminate operations until directed otherwise by SSO</p>	Not required	<p>Level D - (Minimum Requirements)</p> <p>- Standard field attire (Sleeved shirt; long pants) - Safety shoes (Steel toe/shank) - <i>Safety glasses</i> - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Reflective vest for high traffic areas</i> - <i>Coveralls may be worn to protect exposed skin from insects, fire ants, etc. Joints (ankles and wrists) should be taped.</i> - <i>Snake chaps shall be worn in areas of known or suspected snake infestation.</i></p>	Not required
Multimedia sampling including: Groundwater Surface soil	<p><i>Chemical Hazards</i></p> <p>1) Primary contaminants are SVOCs, including waste oils and general Polynuclear Aromatic Hydrocarbons (PAHs). None of the site contaminants, however, are anticipated to be present in significant concentrations to present an inhalation hazard. See Table 6-1 for more information on the chemicals of concern. 2) Transfer of contamination into clean areas</p> <p><i>Physical hazards</i></p> <p>3) Lifting (strain/muscle pulls) 4) Pinches and compressions 5) Slip, trips, and falls 6) Ambient temperature extremes (heat stress) 7) Vehicular (Base) traffic</p> <p><i>Natural hazards</i></p> <p>8) Insect/animal bites and stings (including fire ants and Eastern diamondback rattlesnakes) 9) Inclement weather</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media. 2) Decontaminate all equipment and supplies between sampling locations and prior to leaving the site. 3) Use multiple personnel for heavy lifts. Use proper lifting techniques. 4) Use tools or equipment where necessary to avoid contacting pinch points. 5) Preview work locations for unstable/uneven terrain. 6) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress is provided in Section 4.0 of the HSGM. 7) Traffic and equipment considerations are to include the following: - Establish safe zones related to traffic - All activities are to be conducted consistent with the Base traffic requirements. 8) Avoid potential nesting areas of biting/stinging insects and snakes. Use commercially available insect repellents. Wear appropriate clothing, including snake chaps where warranted. Tape ankle and wrists areas to prevent fire ants, ticks, chiggers, etc. from attaching themselves to you skin. Wear light colored clothing so that biting insects can be easily visible and be removed. Follow directions as specified in Section 6.3 and Section 4.0 of the Health and Safety Guidance Manual concerning natural hazards. 9) Suspend or terminate operations until directed otherwise by SSO</p>	<p><b>It is anticipated that potential contaminant concentrations at outdoor sample locations will not present an inhalation hazard.</b></p> <p>A direct reading Photoionization Detector (PID) (with a lamp strength of at least 10.6 eV), or Flame ionization Detector (FID) will be used to screen samples and to detect the presence of any potential volatile organics. Source monitoring of the monitoring well/sample locations will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <p>- Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (longer than 1 minute in duration) greater than 50 ppm above background in the breathing zone of the at-risk employees requires site activities to be suspended and site personnel to report to an unaffected area.</p> <p>- Work may only resume if airborne readings in worker breathing zone return to below 50 ppm above background levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection.</p>	<p>Level D protection will be utilized for the initiation of all sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <p>- Standard field attire (Sleeved shirt; long pants) - Safety shoes (steel toe/shank) - Safety glasses - Surgical style gloves (double-layered if necessary) - Reflective vest for high traffic areas - <i>Hardhat (when overhead hazards exists, or identified as a operation requirement)</i> - <i>Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential exists for soiling work attire. Coveralls may also be worn to protect exposed skin from insects, fire ants, etc. Joints (ankles and wrists) should be taped.</i> - <i>Snake chaps shall be worn in areas of known or suspected snake infestation.</i></p> <p><b>Note:</b> The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p><b>Personnel Decontamination</b> will consist of a removal and disposal of non-reusable PPE (gloves, coveralls, etc., as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <p>- Equipment drop - Outer coveralls, boot covers, and/or outer glove removal (as applicable) - Removal, segregation, and disposal of non-reusable PPE in bags/containers provided - Soap/water wash and rinse of reusable PPE (e.g., hardhat) if potentially contaminated - Wash hands and face, leave contamination reduction zone.</p> <p>In addition, workers should inspect themselves and one another for the presence of fire ants, ticks, and other insects when exiting wooded areas, grassy fields, etc. This action will be employed to stop the transfer of these insects into vehicles, homes, and offices.</p>

TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAVAL STATION, MAYPORT, FLORIDA

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment (Items in italics are deemed optional as conditions or the FOL or SSO require.)	Decontamination Procedures
<p>Soil Boring using Direct Push Technology (DPT).</p> <p>The soil boring/sampling will be accomplished using split spoons and or MacroCore samplers.</p>	<p><b>Chemical hazards:</b></p> <p>1) It is not anticipated that previously identified contaminants of concern will be encountered in sufficient concentrations that would represent an inhalation hazard concern.</p> <p>Primary contaminants are SVOCs, including waste oils and general Polynuclear Aromatic Hydrocarbons (PAHs). None of the site contaminants, however, are anticipated to be present in significant concentrations to present an inhalation hazard. See Table 6-1 for more information on the chemicals of concern.</p> <p>Further information on these contaminants is provided in Section 6.1.</p> <p>2) Transfer of contamination into clean areas.</p> <p><b>Physical hazards:</b></p> <p>3) Heavy equipment hazards (pinch/compressions points, rotating equipment, hydraulic lines, etc.)</p> <p>4) Noise in excess of 85 dBA</p> <p>5) Energized systems (contact with underground or overhead utilities)</p> <p>6) Lifting (strain/muscle pulls)</p> <p>7) Slips, trips, and falls</p> <p>8) Cuts and lacerations</p> <p>9) Vehicular and foot traffic</p> <p><b>Natural hazards:</b></p> <p>11) Inclement weather</p>	<p>1) Safe work practices and monitoring instruments will be used. Avoid contact with contaminated media (water, soils, etc.). Use good work hygiene practices including avoiding hand-to-mouth contact, washing hands and face prior to breaks/lunch or other hand to mouth activities.</p> <p>2) Restrict the cross use of equipment and supplies between locations and activities without first going through a suitable decontamination. Establishing a decontamination procedure for all equipment taken between work locations.</p> <p>3) All equipment will be inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600.601.602), and manufacturer's design, as applicable. All inspections will be documented using the Equipment Inspection Checklist (See Attachment V).</p> <ul style="list-style-type: none"><li>- Operated and supported by knowledgeable operators and ground crew.</li><li>- Used within safe work zones, with routes of approach clearly demarcated. All personnel not directly supporting this operation will remain at least 25 feet from the point of operation or the height of the mast plus 5-feet, whichever is greater. See Section 9.1.1 of this HASP. This will be the area identified as the exclusion zone.</li><li>- Self-propelled equipment with restricted view moving backward shall be equipped with back up alarm warning system.</li><li>- Personnel will be instructed in the location and operations of the emergency shut-off device(s). This device will be tested initially (and then periodically) to ensure its operational status.</li><li>- Areas will be inspected prior to the movement of the DPT rig and support vehicles to eliminate any physical hazards. This will be the responsibility of the FOL and/or SHSO.</li><li>- Additional safe work procedures for DPT in Section 5.2 of this HASP and Section 4.0 of the HSGM.</li></ul> <p>4) Hearing protection will be used during all subsurface activities using the DPT Rig or when noise levels are &gt;85 dBA. (during operation). Boundaries will be established to limit the affect of the noise hazard. The height of the mast + 5 feet or 25 feet whichever is greater will remove personnel far enough from the noise source as not to present a noise exposure concern. Hearing protection rule of thumb:</p> <ul style="list-style-type: none"><li>- Excessive noise (&gt;85dBA) are being approach when you have to raise your voice to talk to someone within 2 feet of your location.</li></ul> <p>5) Soil boring activities will proceed in accordance with the Utility Locating and Excavation Clearance SOP in Attachment IV of this HASP. All utility clearances will be obtained in writing, and locations identified and marked, prior to activities. Utility clearance is being provided by Sunshine State One-Call of Florida, Inc. coordinated through City of Jacksonville and Jacksonville Airport Authority contacts.</p> <p>6) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques as described in Table 5-1 for mobilization/demobilization. DPT stems, auger flights, and well construction supplies are some of the common material that are handled and because of their weight will present a lifting strain hazard associated with this activity.</p> <p>7) Preview work locations for unstable/uneven terrain:</p> <ul style="list-style-type: none"><li>- Cover, guard and barricade all open pits, ditches, and embankments near work areas, as necessary.</li><li>- Ruts, roots, tools, and other tripping hazards should be eliminated to minimize trips and falls.</li><li>- Maintain a clutter free work area.</li><li>- Construct fences or other means of marking (i.e. signs and postings) to control and isolate traffic in the work area and for isolating resource and/or staging areas.</li></ul> <p>8) To prevent cuts and lacerations, the following provisions are required:</p> <ul style="list-style-type: none"><li>- Always cut away from yourself and others.</li><li>- Place items to be cut in a secure and stable area.</li><li>- Change blades often to maintain a sharp cutting edge.</li><li>- Wear cut-resistant glove(s) made of leather or heavy cotton.</li></ul> <p>9) Use traffic-warning signs, flag persons, and high visibility vests as determined by the SHSO when working along traffic thoroughfares.</p> <ul style="list-style-type: none"><li>- Establish safe zones of approach (i.e. Boom or mast + 5 feet).</li><li>- The FOL and/or the SHSO shall preview traffic routes (foot and vehicular) before the committing personnel and resources.</li></ul> <p>11) To minimize hazards of this nature, the following provisions shall be employed:</p> <ul style="list-style-type: none"><li>- Wear appropriate clothing for weather conditions.</li><li>- Provide acceptable shelter and replacement liquids for field crews as relief from excessive ambient temperatures.</li><li>- Under conditions of elevated levels of PPE, periods of acclimatization, excessive ambient temperature extremes, or if you believe someone is suffering from a heat/cold related disorder, it may be necessary to conduct heat/cold stress monitoring.</li><li>- Electrical storms/high winds - Suspend or terminate operations until directed otherwise by SHSO.</li></ul> <p>Follow the provisions as specified in Section 4.0 of the Tetra Tech NUS, Inc. Health and Safety Guidance Manual regarding the identification and evaluation of heat/cold stress related conditions.</p>	<p><b>It is anticipated that potential contaminant concentrations at outdoor sample locations will not present an inhalation hazard.</b></p> <p>A direct reading Photoionization Detector (PID) (with a lamp strength of at least 10.6 eV), or Flame ionization Detector (FID) will be used to screen samples and to detect the presence of any potential volatile organics. Source monitoring of the monitoring well/sample locations will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <ul style="list-style-type: none"><li>- Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (longer than 1 minute in duration) greater than 50 ppm above background in the breathing zone of the at-risk employees requires site activities to be suspended and site personnel to report to an unaffected area.</li><li>- Work may only resume if airborne readings in worker breathing zone return to below 50 ppm above background levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection.</li></ul> <p>Monitoring shall be conducted at the prescribed depths as indicated on the boring logs at the source (borehole) and the breathing zone. Monitoring shall also be conducted at the sampler's location to in the same prescribed frequency when handling samples.</p> <p>Noise monitoring may be conducted at the discretion of the SHSO.</p> <p>Action Level - &gt;85 dBA Require participation in the Project Hearing Conservation Program. As a general rule of thumb, if you have to raise your voice to communicate with someone who is within arm's length of you, then noise levels are probably over 85 dBA and hearing protection should be used.</p>	<p>Soil boring operations and monitoring well installation will be initiated in Level D protection:</p> <p><b>Sampler/Oversight Personnel:</b></p> <ul style="list-style-type: none"><li>- Standard field dress (long pants, Sleeved shirts)</li><li>- Steel toe safety shoes or work boots</li><li>- Hard hat</li><li>- Safety Glasses</li><li>- Nitrile surgeon style inner gloves for sampling</li><li>- Hearing protection</li><li>- <i>Impermeable boot covers</i></li><li>- <i>Reflective vest for traffic areas</i></li></ul> <p><b>DPT Operators:</b></p> <ul style="list-style-type: none"><li>- Standard field attire including sleeved shirt and long pants</li><li>- Steel toe safety shoes (Steel toe/shank)</li><li>- Safety glasses</li><li>- Nitrile inner and outer gloves or supported neoprene</li><li>- Hearing protection</li><li>- Hard hat</li><li>- <i>Impermeable boot covers</i></li></ul> <p><b>Note:</b> Use of respiratory protection will require the implementation of the Tetra Tech NUS, Inc. Respiratory Protection Program provided in the Health and Safety Guidance Manual. The implementation of this program will require the modification of this HASP.</p> <p>As site conditions may change, the following equipment will be maintained during all on-site activities:</p> <ul style="list-style-type: none"><li>- Fire Extinguishers</li><li>- First-aid Kit</li><li>- Eyewash unit (during well installation)</li></ul> <p><b>Note:</b> The Safe Work Permit(s) for this task (See Attachment III of this HASP) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p><b>Personnel Decontamination</b> will consist of a soap/water wash and rinse for reusable and non-reusable outer protective equipment (boots, gloves, impermeable apron, as applicable</p> <p>The sequential procedure is as follows: Stage 1: Equipment drop Decontamination personnel will clean hand tools as necessary. Stage 2: Soap/water wash and rinse of outer boots as applicable and gloves Stage 3: Soap/water wash and rinse of the impermeable apron, as applicable. Stage 4: Disposable PPE will be removed and bagged. Stage 5: Wash face and hands</p> <p>Note: For remote locations away from the centralized decontamination unit:</p> <ul style="list-style-type: none"><li>- Bag and/or wrap all disposable and reusable equipment, respectively for transport back to the decontamination unit.</li><li>- Hygienic wipes may be used for cleaning hands and face</li></ul> <p><b>Equipment Decontamination</b> - All heavy and sampling equipment decontamination will take place at a centralized decontamination pad utilizing a steam cleaner or pressure washer as prescribed in Table 5-1 for that task. Heavy equipment will have the wheels and tires cleaned along with any loose debris removed, prior to transporting to the central decontamination area. All site vehicles will have restricted access to exclusion zones. Vehicles will have their wheels/tires cleaned or sprayed off as applicable as not to track mud onto the roadways servicing this installation. Roadways shall be cleared of any debris resulting from the onsite activity. This is especially critical due to the FOD aspect when working on the airside of the facility</p> <p>The FOL or the SHSO will be responsible for evaluating equipment arriving/leaving the site, and between locations.</p>

TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAVAL STATION, MAYPORT, FLORIDA

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SSO require.)</i>	Decontamination Procedures
Decontamination of Sampling Equipment	<p><i>Chemical Hazards</i></p> <p>1) Exposure to site contaminants is not anticipated to be significant based on the nature of this task.</p> <p>2) Decontamination fluids – e.g., Liquinox (detergent), acetone, or isopropanol</p> <p><i>Physical Hazards</i></p> <p>3) Lifting (strain/muscle pulls) 4) Ambient temperature extremes (heat stress) 5) Slips, trips, and falls</p>	<p>1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Obtain manufacturer's MSDS for any decontamination solvents used onsite. Use appropriate PPE as identified on MSDS. All chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication section of the Health and Safety Guidance Manual (Section 5).</p> <p>3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes.</p> <p>4) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress is provided in Section 4.0 of the HSGM.</p> <p>5) Preview work locations for unstable/uneven terrain.</p>	<p>Use visual observation, and real-time monitoring instrumentation to ensure all equipment has been properly cleaned of contamination and dried. After decon is completed, screen equipment with a PID/FID. If any elevated readings (i.e., greater than 50 ppm above background) are observed, perform decon again and rescreen. Repeat until no elevated PID/FID readings are noted.</p>	<p>For sampling equipment (e.g., MacroCore Samplers, bailers, etc.), the following PPE is required</p> <p>Level D Minimum requirements -</p> <ul style="list-style-type: none"><li>- Standard field attire (Long sleeve shirt; long pants)</li><li>- Safety shoes (Steel toe/shank)</li><li>- Nitrile outer gloves</li><li>- Safety glasses</li></ul>	<p><b>Personnel Decontamination</b> will consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"><li>- Equipment drop</li><li>- Soap/water wash and rinse of outer gloves, as applicable</li><li>- Disposable PPE will be removed and bagged.</li></ul> <p><b>Sampling Equipment Decontamination</b></p> <p>Sampling equipment will be decontaminated as per the requirements in the Sampling and Analysis Plan and/or Work Plan.</p> <p>MSDS for any decon solutions (Alconox, isopropanol, etc.) will be obtained and used to determine proper handling / disposal methods and protective measures (PPE, first-aid, etc.).</p>
IDW management and moving IDW drums to storage areas	<p><i>Chemical Hazards</i></p> <p>1) Exposure to site contaminants is not anticipated to be significant based on the nature of this task.</p> <p>2) Transfer of contamination into clean areas</p> <p><i>Physical hazards</i></p> <p>3) Lifting (strain/muscle pulls) 4) Pinches and compressions 5) Slip, trips, and falls 6) Vehicular and foot traffic 7) Ambient temperature extremes (heat stress)</p> <p><i>Natural hazards</i></p> <p>8) Insect/animal bites and stings, poisonous plants, etc.</p>	<p>1) Employ real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media (e.g. water).</p> <p>2) Decontaminate all equipment and supplies, if they become contaminated, between locations and prior to leaving the site.</p> <p>3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes.</p> <p>4) Use tools or equipment where necessary to avoid contacting pinch points.</p> <p>5) Preview work locations for unstable/uneven terrain.</p> <p>6) Traffic and equipment considerations are to include the following:</p> <ul style="list-style-type: none"><li>- Establish safe zones related to traffic</li><li>- All activities are to be conducted consistent with the Base traffic requirements.</li></ul> <p>7) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding heat stress is provided in Section 4.0 of the HSGM.</p> <p>8) Avoid nesting areas, use repellents. Report potential hazards to the SSO. Follow guidance presented in Section 4.0 of the HSGM.</p>	<p><b>It is anticipated that potential contaminant concentrations at outdoor sample locations will not present an inhalation hazard.</b></p> <p>A direct reading Photoionization Detector (PID) (with a lamp strength of at least 10.6 eV), or Flame ionization Detector (FID) will be used to screen samples and to detect the presence of any potential volatile organics. Source monitoring of the monitoring well/sample locations will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <ul style="list-style-type: none"><li>- Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (longer than 1 minute in duration) greater than 50 ppm above background in the breathing zone of the at-risk employees requires site activities to be suspended and site personnel to report to an unaffected area.</li><li>- Work may only resume if airborne readings in worker breathing zone return to below 50 ppm above background levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection.</li></ul>	<p>Level D protection will be utilized for the initiation of all sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"><li>- Standard field attire (long sleeve shirt; long pants)</li><li>- Cotton/leather work gloves when handling drums</li><li>- Safety shoes (steel toe/shank)</li><li>- Safety glasses</li><li>- <i>Reflective vest for high traffic areas</i></li></ul>	<p><b>Personnel Decontamination</b> will consist of a soap/water wash and rinse for reusable outer protective equipment (boots and coveralls, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"><li>- Equipment drop</li><li>- Soap/water wash and rinse of outer boots and gloves, as applicable</li><li>- Disposable PPE will be removed and bagged.</li></ul>

TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
NAVAL STATION, MAYPORT, FLORIDA

Tasks/Operation/Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring - Type And Action Levels	Personal Protective Equipment ( <i>Items In Italics Are Deemed Optional As Conditions Or The FOL Or the SSO Require.</i> )	DECONTAMINATION PROCEDURES
Surveying activities	<p><b>Chemical hazards:</b></p> <p>1) Exposure to potential site contaminants during surveying activities is unlikely given the nature of surveying work and the limited contact with potentially contaminated media (i.e. soils, etc.)</p> <p>Refer to Section 6.0 for a list of potential and representative site contaminants. See individual Safe Work Permits contained in Attachment III for specific contaminants of concern associated with particular sites and site activities.</p> <p><b>Physical hazards:</b></p> <p>2) Slip, trip, and fall hazards (uneven or unstable terrain)</p> <p>3) Vehicular and foot traffic</p> <p>4) Ambient temperature extremes</p> <p><b>Natural hazards:</b></p> <p>5) Insect/animal bites or stings, poisonous plants, etc.)</p> <p>6) Inclement weather</p>	<p>1) To further reduce the potential for exposure, personnel performing surveying activities will minimize contact with potentially contaminated media and will avoid areas where chemical hazards may exist.</p> <p>2) Preview work locations and site lines for uneven/unstable terrain. Clear necessary vegetation and establish temporary means for traversing hazardous terrain (e.g. rope ladders).</p> <p>3) Traffic considerations include the following:</p> <ul style="list-style-type: none"><li>- Establishing safe zones of approach.</li><li>- Ensuring all personnel working in high equipment traffic areas are wearing reflective vests for high visibility.</li><li>- Following traffic rules and requirements established by NS Mayport.</li><li>- Traffic patterns will be required in support of on-site activities. However, regulated patterns in and about the work zones will be established to safely control the flow patterns of mechanized vehicles and pedestrians.</li></ul> <p>4) Wear appropriate clothing for the anticipated weather conditions while maintaining the required level of protection. Provide acceptable shelter and fluids for field crews. Refer to the TtNUS Health and Safety Guidance Manual for additional information regarding heat and cold stress.</p> <p>5) Wear appropriate clothing and PPE. Avoid potential nesting areas and suspicious vegetation (poison oak &amp; ivy, etc.). When feasible and necessary, use commercially available insect repellants. Report potential hazards to the SSO. Inspect clothing and persons for ticks and other vectors during and after work activities in wooded areas.</p> <p>6) All operations will be temporarily suspended during electrical storms.</p>	Air monitoring is not required given the unlikelihood that airborne contaminants will be present. The potential for exposure to site contaminants during this activity is considered minimal.	<p>Surveying activities shall be performed in Level D protection</p> <p>Level D Protection consists of the following:</p> <ul style="list-style-type: none"><li>- Standard field dress including sleeved shirt and long pants</li><li>- Shoes rugged lug sole for traction</li><li>- Work gloves shall be worn when clearing brush.</li><li>- <i>Safety glasses, hard hats (if working near machinery, overhead hazards, or clearing brush)</i></li><li>- <i>Snake chaps for heavily wooded area where encounters are likely.</i></li><li>- <i>Tyvek coveralls may be worn to provide additional protection against poisonous plants and insects, particularly ticks.</i></li><li>- <i>Reflective or blaze orange vests should be worn when working along traffic thoroughfares.</i></li></ul> <p><b>Note:</b> The Safe Work Permit(s) for this task (See Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p><b>Personnel Decontamination</b> - A structured decontamination is not required as the likelihood of encountering contaminated media is considered remote. However, survey parties should inspect themselves and one another for the presence of ticks when exiting wooded areas, grassy fields, etc. This action will be employed to stop the transfer of these insects into vehicles, homes, and offices. In addition, early detection shall provide for early removal.</p>

## **6.0 HAZARD ASSESSMENT**

The following section provides information regarding the chemical, physical, and natural hazards anticipated to be present during the activities to be conducted. Table 6-1 provides information related to chemical constituents that have been identified by analysis or are suspected to be present at the site based on historical data. Specifically, toxicological information, exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data are discussed in the table.

### **6.1 CHEMICAL HAZARDS**

The potential health hazards associated with SWMUs 6 and 7 at NS Mayport include inhalation, ingestion, and dermal contact of various contaminants that may be present in groundwater. Semi-Volatile Organic Compounds (SVOCs), including waste oils and general Polynuclear Aromatic Hydrocarbons (PAHs) have been identified as the primary class of these contaminants, including the specific compound(s) of interest

Table 6-1 provides information on the substances likely to be present at the site to be investigated. Included is information on the toxicological, chemical, and physical properties of these substances. It is anticipated that the greatest potential for exposure to site contaminants is during intrusive activities (e.g., groundwater sampling). Exposure to these compounds is most likely to occur through ingestion and inhalation of contaminated water, or hand-to-mouth contact during intrusive activities. For this reason, PPE and basic hygiene practices (washing face and hands before leaving site) will be extremely important. Inhalation exposure will be avoided by using appropriate PPE and engineering controls where necessary. Significant exposure via inhalation is not anticipated during the planned scope of work.

### **6.2 PHYSICAL HAZARDS**

The physical hazards that may be present during the performance of site activities are summarized below:

- Slips, trips, and falls
- Lifting (strain/muscle pulls)
- Ambient temperature extremes (heat stress)
- Pinches and compressions
- Vehicular traffic

**TABLE 6-1**  
**CHEMICAL, PHYSICAL AND TOXICOLOGICAL DATA**  
**NAVAL STATION MAYPORT, FLORIDA**

Substance	CAS No.	Air Monitoring	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Waste Oils  All information is based on mineral oil	N.E. 8012-95-1 for mineral oil	Varies between fractions however waste oils tend to be less volatile. The FID tends to handle the longer chained aliphatic hydrocarbons more efficiently than its PID counterpart and would be selected as the instrument of choice.	ACGIH; NIOSH: 5 mg/m <sup>3</sup> (Oil mists); 10 mg/m <sup>3</sup> STEL  OSHA: 5 mg/m <sup>3</sup> (Oil mists)	Non-volatile substance, therefore no respiratory protection is required. In an aerosol form dust and mist respirator would be considered acceptable for up to 500 mg/m <sup>3</sup> .  <b>Recommended gloves:</b> Any glove suitable to prevent skin contact (Nitrile has been the one most widely used for the other substances, and will be acceptable).	<b>Boiling Pt:</b> 680°F; 360°C <b>Melting Pt:</b> Not available <b>Solubility:</b> Insoluble <b>Flash Pt:</b> 275-500°F; 135-260°C depends on the distillation fraction <b>LEL/LFL:</b> Not available <b>UEL/UFL:</b> Not available <b>Vapor Density:</b> Not available <b>Vapor Pressure:</b> <0.5 mmHg <b>Specific Gravity:</b> 0.90 <b>Incompatibilities:</b> None reported <b>Appearance and odor:</b> Colorless, oily, with an odor of burned lubricating oil.	Minor irritation to the eyes, skin, and respiratory system.
General PAHs / Coal Tar Pitch Volatiles / Creosote / cresol (Fluoranthene, pyrene, benzo(a) anthracene, benzo(a) pyrene, benzo(f)fluoranthene, benzo(k)fluoranthene, etc.)	(CAS Numbers vary depending on specific compound )	PID: I.P. of 8.97 eV, relative response ratio unknown.  FID: Response factor unknown but given the substances flammability, detection by FID can be anticipated.	General PAHs:  Most PAHs have no established exposure limits. Other Coal Tar Pitch Volatiles / PAHs such as chrysene and benzo(a)pyrene have an exposure limit of 0.2 mg/m <sup>3</sup> (OSHA and ACGIH).  0.1 mg/m <sup>3</sup> - (NIOSH) Creosote / Cresol: OSHA; ACGIH: 5 ppm NIOSH: 2.3 ppm IDLH: 80 mg/m <sup>3</sup>	Adequate - use a full-face air-purifying respirator with organic vapor / dust/mist cartridge up to 250 ppm. Cresol has an Odor Threshold of 0.00005-0.0079 ppm.  <b>Recommended gloves:</b> Viton >96.00 hrs; butyl rubber >90.00 hrs; neoprene >4.50 hrs	Properties of various PAHs/Coal Tar Pitch Volatiles vary depending upon the specific compound.  <u>For Creosote/Cresol:</u> <b>Boiling Pt:</b> 376-397°F; 191-203°C <b>Melting Pt:</b> 52-96°F; 10.9-35.5°C <b>Solubility:</b> Insoluble <b>Flash Pt:</b> 178°F; 81°C <b>LEL/LFL:</b> Not available <b>UEL/UFL:</b> Not available <b>Vapor Density:</b> 3.72 <b>Vapor Pressure:</b> 1 mmHg @ 100-127°F; 38-53°C <b>Specific Gravity:</b> 1.030-1.038 <b>Incompatibilities:</b> Nitric acid, oleum, chlorosulfonic acid, oxidizers <b>Appearance and Odor:</b> Yellowish or colorless, flammable, oily liquid (often brownish because of impurities or oxidation)	Regulated based on effects on respiratory tract and skin irritation Other effects may include eye irritation and central nervous system, disturbances. Acute exposures may result in difficulty breathing, respiratory failure and skin and eye irritation and burns. Chronic exposure may damage the liver, kidneys, lungs and skin and cause photosensitivity.  IARC, NTP, NIOSH, ACGIH, and the EPA list some PAHs such as benzo(a)pyrene as a potential carcinogen (ARC 2A, NTP-2, ACGIH TLV-A2, NIOSH-X, EPA-B2).

These physical hazards are discussed in Table 5-1 as applicable to each site task. Further, these hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual.

### **6.3 NATURAL HAZARDS**

Insect/animal bites and stings, inclement weather, and other natural hazards must be considered given the location of activities to be conducted. In general, avoidance of areas of known infestation or nesting will be the preferred exposure control. Use of additional PPE with joints (ankles and wrists) taped, such as long pants tucked into boots or coveralls, is also recommended. Specific discussion on principle hazards of concern follows:

#### **6.3.1 Fire Ants**

Fire ants present a unique situation when working outdoors in Florida. Their aggressive behavior and their ability to sting repeatedly can pose a unique health threat. The sting injects venom that causes an extreme burning sensation. Pustules form which can become infected if scratched. Allergic reactions of people sensitive to the venom include dizziness, swelling, shock and in extreme cases unconsciousness and death. People exhibiting such symptoms should see a physician.

Fire ants can be identified by their habitat. They build mounds in open sunny areas sometimes supported by a wall or shrub. The mound has no external opening. The size of the mound can range from a few inches across to some which are in excess of two feet or more in height and diameter. When disturbed they defend it by swarming out and over the mound, even running up grass blades and sticks.

#### **6.3.2 Snakes, Insects, and Other Animals**

The site is suspected of supporting a large population of eastern diamondback rattlesnakes. Given that areas to be investigated could be prime nesting and/or hiding locations for snakes and insects, precautions will be taken when opening manholes and other access doors. When possible, doors and manhole covers will be opened away from personnel to allow snakes or insects to escape. Personnel should avoid reaching into areas that are not visibly clear of snakes or insects. Snake chaps will be worn in areas of known or anticipated snake infestation. Site personnel who are allergic to stinging insects such as bees, wasps, and hornets must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be listed on the Medical Data Sheet and the FOL and SSO notified.

There are various areas throughout the U.S. where Lyme Disease is endemic. Fortunately, Florida is not one of these areas. Nonetheless, personnel should be aware of the hazards of tick bites and Lyme

Disease. The longer a disease carrying tick remains attached to the body, the greater the potential for contracting the disease. Wearing long sleeved shirts and long pants (tucked into boots). As well as performing frequent body checks will prevent long term attachment. Site first aid kits should be equipped with medical forceps and rubbing alcohol to assist in tick removal. For information regarding tick removal procedures, and symptoms of exposure consult Section 4.0 of the Health and Safety Guidance Manual.

An Office of Natural Resources or similar entity on Base should be contacted for further direction on the hazards and precautions of naturally occurring wildlife and insects.

### **6.3.3      Inclement Weather**

Project tasks under this Scope of Work will be performed outdoors and near water. As a result, inclement weather may be encountered. In the event that adverse weather conditions arise (electrical storms, hurricanes, etc.), the FOL and/or the SSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.



## **7.0 AIR MONITORING**

Direct reading instruments will be used at the site to detect and evaluate the presence of site contaminants and other potentially hazardous conditions. As a result, specific air monitoring measures and requirements are established in Table 5-1 pertaining to the specific hazards and tasks of an identified operation. Additionally, the Health and Safety Guidance Manual, Section 1.0, contains detailed information regarding direct reading instrumentation, as well as general calibration procedures of various instruments.

### **7.1 INSTRUMENTS AND USE**

Instruments will be used primarily to monitor source points and worker breathing zone areas, while observing instrument action levels. Action levels are discussed in Table 5-1 as they may apply to a specific task or location.

#### **7.1.1 Photoionization Detector or Flame Ionization Detector**

In order to accurately monitor for any substances which may present an exposure potential to site personnel, a Photoionization Detector (PID) using a lamp energy of 10.6 eV or higher will be used. This instrument will be used to monitor potential source areas and to screen the breathing zones of employees during site activities. The PID has been selected because it is capable of detecting the organic vapors of concern. A Flame Ionization Detector (FID) may be used as an alternative to the PID.

Prior to the commencement of any field activities, the background levels of the site must be determined and noted. Daily background readings will be taken away from any areas of potential contamination. These readings, any influencing conditions (i.e., weather, temperature, humidity) and site location must be documented in the field operations logbook or other site documentation (e.g., sample log sheet).

#### **7.1.2 Hazard Monitoring Frequency**

Table 5-1 presents the frequencies that hazard monitoring will be performed as well as the action levels which will initiate the use of elevated levels of protection. The SSO may decide to increase these frequencies based on instrument responses and site observations. The frequency at which monitoring is performed will not be reduced without the prior consent of the PHSO or HSM.

### **7.2 INSTRUMENT MAINTENANCE AND CALIBRATION**

Hazard monitoring instruments will be maintained and pre-field calibrated by the TtNUS Equipment Manager. Operational checks and field calibration will be performed on the instruments each day prior to

their use. Field calibration will be performed on instruments according to manufacturer's recommendations (for example, the PID must be field calibrated daily and an additional field calibration must be performed at the end of each day to determine any significant instrument drift). These operational checks and calibration efforts will be performed in a manner that complies with the employees health and safety training, the manufacturer's recommendations, and with the applicable manufacturer standard operating procedure (copies of which can be found in the Health & Safety Guidance Manual which will be maintained on site for reference). The calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook, provided that the information specified in Figure 7-1 is recorded. This required information includes the following:

- Date calibration was performed
- Individual calibrating the instrument
- Instrument name, model, and serial number
- Any relevant instrument settings and resultant readings (before and after) calibration
- Identification of the calibration standard (lot no., source concentration, supplier)
- Any relevant comments or remarks

### **7.3 DOCUMENTING INSTRUMENT READINGS**

The SHSO is responsible for ensuring that monitoring instruments are used in accordance with the specifications of this HASP and with manufacturer's specifications/recommendations. In addition, the SHSO is also responsible for ensuring that the instrument use is documented. This requirement can be satisfied either by recording instrument readings on pre-printed sampling log sheets or in a field log book. This includes the requirement for documenting instrument readings that indicate no elevated readings above noted daily background levels (i.e., no-exposure readings). At a minimum, the SHSO must document the following information for each use of an air monitoring device:

- Date, time, and duration of the reading
- Site location where the reading was obtained
- Instrument used
- Personnel present at the area where the reading was noted

Other conditions that are considered relevant to the SHSO (such as possible instrument interferences, etc.)

FIGURE 7-1

## DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: \_\_\_\_\_

PROJECT NO.: \_\_\_\_\_

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		

## **8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS**

### **8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING**

This section specifies health and safety training and medical surveillance requirements for both Tetra Tech NUS and subcontractor personnel participating in on-site activities. The Tetra Tech NUS and subcontractor personnel who will engage in field associated activities as described in this HASP must have:

- Completed 40 hours of introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120(e).
- Completed 8-Hour Refresher Training, if the identified persons had introductory training more than 12 months, prior to this site work.
- Completed 8-hour Supervisory training in accordance with 29 CFR 1910.120(e) (4), if their assigned function will involve the supervision of subordinate personnel.

Documentation of introductory training or equivalent work experience, supervisory, and refresher training, as well as, site-specific training will be maintained at the site. Copies of certificates or other official documentation will be used to fulfill this requirement and to track site personnel's training status. The SHSO shall be responsible for insuring training qualifications through review of training documentation and for monitoring the status of on-site personnel to insure during the course of this project site personnel do not cycle outside of their training compliance status. The documentation supporting training compliance and status shall be maintained at the project site and be made available, upon request.

### **8.2 SITE-SPECIFIC TRAINING**

Tetra Tech NUS SHSO will provide site-specific training to Tetra Tech NUS employees and subcontractor personnel who will perform work on this project.

Figure 8-1 will be used to document the provision and content of the project-specific and associated training. Site personnel will be required to sign this form prior to commencement of site activities. This training documentation will be employed to identify personnel who through record review and attendance of the site-specific training are cleared for participation in site activities. This document shall be posted to maintain an active list of cleared site personnel.

TtNUS will conduct a pre-activities training session prior to initiating site work. Additionally, a brief meeting may be held daily to discuss operations planned for that day as well as, a short meeting may be held at the end of the day to discuss the operations completed and any problems encountered. This activity will be supported through the use of a Safe Work Permit System (See Section 9.10) and/or documented in the Project Logbook.

### **8.3 MEDICAL SURVEILLANCE**

Tetra Tech NUS and subcontractor personnel participating in project field activities will have had a physical examination. Physical examinations shall meet the minimum requirements of paragraph (f) of OSHA 29 CFR 1910.120. The physical examinations will be performed to ensure that personnel are medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained at the job site and made available, as necessary. A letter from an officer of the company or a medical clearance authorized by the physician can be used as documentation. Documentation must indicate that clearance provided are in accordance with medical surveillance as determined by 29 CFR 1910.120 (f).

The SHSO shall be responsible for ensuring that personnel participating in this project provide documentation regarding their medical qualifications. Personnel associated with this project will maintain a current status regarding medical surveillance as determined by 29 CFR 1910.120 (f) or the prescribed interval as determined by the Licensed Occupational Health Care Provider. Documentation supporting medical surveillance compliance and status shall be made available, upon request.

#### **8.3.1 Medical Data Sheet**

Each field team member, including subcontractors and visitors, entering the exclusion zone(s) shall be required to complete and submit a copy of the Medical Data Sheet (see Attachment II). This shall be filled out and collected, reviewed and maintained by the SSO. The purpose of this document is to provide site personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

### **8.4 SUBCONTRACTOR EXCEPTION**

If through the execution of their contract elements the subcontractor will not enter the exclusion zone and there is no potential for exposure to site contaminants, subcontractor personnel may be exempt from the training and medical surveillance requirements with the exception of Section 8.2. Examples of subcontractors who may qualify as exempt from training and medical surveillance requirements may

include surveyors who perform surveying activities in site perimeter areas or areas where there is no potential for exposure to site contaminants and support or restoration services. Use of this Subcontractor Exception is strictly limited to the authority of the TtNUS Health and Safety Manager.

### FIGURE 8-1

## SITE-SPECIFIC TRAINING DOCUMENTATION

My signature below indicates that I am aware of the potential hazardous nature of performing remedial investigation activities at NS Mayport in Mayport, Florida and that I have received site-specific training which included the elements presented below:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present at the sites
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Contents of the Health and Safety Plan
- Emergency response procedures (evacuation and assembly points)
- Initial response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Review of the use of Safe Work Permits

I have been given the opportunity to ask questions and these questions have been answered to my satisfaction. The training dates listed (introductory, refresher, and supervisory, as applicable) and my medical surveillance requirements are accurate and correct.

[illegible]

## **9.0 SPILL CONTAINMENT PROGRAM**

### **9.1 SCOPE AND APPLICATION**

It is anticipated that quantities of bulk potentially hazardous materials (greater than 55-gallons) will not be handled during the site activities. It is possible, however, that as the job progresses disposable PPE and other non-reusable items may be generated. As needed, 55-gallon drums will be used to contain unwanted items generated during sampling activities. The drum(s) will be labeled with the site name and address, the type of contents, and the date the container was filled as well as an identified contact person. As warranted, samples will be collected and analyzed to characterize the material and determine appropriate disposal measures. Once characterized the drum(s) will be removed from the staging area and disposed of in accordance with Federal, State and local regulations. Given the likely solid nature of drum contents, a comprehensive Spill Containment Program is not necessary. The following discussion is provided as contingency information only.

### **9.2 POTENTIAL SPILL AREAS**

Should drums contain liquid wastes, potential spill areas will be monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Areas designated for handling, loading, and unloading of potentially contaminated waters and debris present limited potential for leaks or spills.

#### **9.2.1 Site Drums/Containers**

The drums/containers used for containing liquids will be sealed, labeled, and staged within a centralized area awaiting shipment or disposal.

### **9.3 LEAK AND SPILL DETECTION**

To establish an early detection of potential spills or leaks, periodic inspections by the SSO will be conducted during working hours to visually determine that containers are not leaking. If a leak is detected, the first approach will be to transfer the container contents using a hand pump into a new container. Other provisions for the transfer of container contents will be made and appropriate emergency contacts will be notified, if necessary. In most instances, leaks will be collected and contained using absorbents such as Oil-dry, vermiculite, and/or sand, which may be stored at the staging area in a conspicuously marked drum. This material too, will be containerized for disposal pending analyses. The inspections will be documented in the Project Logbook.



#### **9.4 PERSONNEL TRAINING AND SPILL PREVENTION**

Personnel will be instructed on the procedures for spill prevention, containment, and collection of hazardous materials in the site-specific training. The FOL and/or the SSO will serve as the Spill Response Coordinator for this operation should the need arise.

#### **9.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT**

The following represents the types of equipment that may be maintained at the staging area for the purpose of supporting this Spill Containment Program (depending on the likelihood that drums and/or liquid wastes are generated).

- Sand, clean fill, vermiculite, or other noncombustible absorbent (oil-dry);
- Drums (55-gallon U.S. DOT 17-E or 17-H)
- Shovels, rakes, and brooms
- Labels

#### **9.6 SPILL CONTROL PLAN**

This section describes the procedures the TtNUS field crewmembers will employ upon the detection of a spill or leak.

- 1) Notify the SSO or FOL immediately.
- 2) Take immediate actions to stop the leak or spill by plugging or patching the drum or raising the leak to the highest point. Avoid contacting drum contents. Spread the absorbent material in the area of the spill covering completely.

It is not anticipated that a spill will occur in which the field crews cannot handle. Should this occur; however, the FOL or SSO will notify appropriate emergency response agencies.

## **10.0 SITE CONTROL**

This section outlines the means by which TtNUS will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is recognized that, given the planned scope of work, the application of a three-zone approach is considered conservative. Nonetheless, this approach will be used and includes an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. It is also anticipated that this control measure will be used to control access to site work areas. Use of such controls will restrict the general public, minimize the potential for the spread of contaminants, and protect individuals who are not cleared to enter work areas.

### **10.1 EXCLUSION ZONE**

The Exclusion Zone will be considered those areas of active operations plus an established safety zone depending on the task. The Exclusion Zone boundaries for multimedia sampling will be 10 feet surrounding the point of sampling.

For DPT Operations the boundaries will be determined by calculating the height of the fully extended mast plus 5 feet or 25 feet, whichever is greater. This boundary demarcation has been selected based on removal of personnel from hazards associated with this operation. In this case our primary concern is physical hazards, pressurized lines and systems and noise. By establishing the line at least at 25 feet will provide a sufficient distance for protection from flying projectiles associated with pressurized systems, as well as, providing sufficient distance thereby reducing potential for excessive noise exposure.

Where appropriate and necessary to direct facility personnel, this area will be delineated using barrier tape, cones and/or drive poles, and postings.

### **10.2 CONTAMINATION REDUCTION ZONE**

The Contamination Reduction Zone (CRZ) will be a buffer area between the Exclusion Zone and any area of the site where contamination is not suspected. The personnel and sampling equipment decontamination will take place in this area. This area will also serve as a focal point in supporting Exclusion Zone activities.

### **10.3 SUPPORT ZONE**

The Support Zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. The Support Zones will be

established at areas of the site where exposure to site contaminants would not be expected during normal working conditions or foreseeable emergencies.

#### **10.4 SITE VISITORS**

Site visitors for the purpose of this document are identified as representing the following groups of individuals:

- Personnel invited to observe or participate in operations by TtNUS
- Regulatory personnel (EPA, FDEP, OSHA, etc.)
- NS Mayport personnel
- Other authorized visitors

Personnel working on this project are required to gain initial access to the site by coordinating with the TtNUS FOL or designee and following established site access procedures.

Upon gaining access to the site, visitors wishing to observe operations in progress will be escorted by a TtNUS representative (arranged for by the FOL) and shall be required to meet the minimum requirements discussed below:

- Site visitors will be routed to the FOL, who will sign them into the field logbook. Information to be recorded in the logbook will include the individual's name (proper identification required), the entity which they represent, and the purpose of the visit.
- Site visitors will be required to produce the necessary information supporting clearance to the site. This shall include information attesting to applicable training (40-hours of HAZWOPER training) and medical surveillance as stipulated in Section 8.0 of this document. In addition, to enter the site operational zones during planned activities, the visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this HASP.

Once the site visitors have completed the above items, they will be permitted to enter the operational zone. Visitors are required to observe the protective equipment and site restrictions in effect at the site at the time of their visit. Only Visitors meeting the requirements stipulated in this plan will be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause the termination of onsite activities until the unauthorized visitor is removed from the premises. Removal of unauthorized visitors will be accomplished with support from the FOL, SSO or on-site security personnel.

## **10.5 SITE SECURITY**

Site security will be accomplished using existing base security resources and procedures, supplemented by TtNUS personnel, if necessary. TtNUS will retain control over active operational areas. The first line of security will take place at the base boundaries restricting the general public. The second line of security will take place at the work site referring interested parties to the FOL. The FOL will serve as a focal point for site personnel, and will serve as the final line of security and the primary enforcement contact.

## **10.6 SITE MAPS**

Once the areas of contamination, access routes, utilities, topography, and dispersion routes are determined, a site map will be generated and adjusted as site conditions change. These maps will show potential points of contact with the public, roadways, and other significant characteristics that may impact site operations and safety. Site maps will be posted to illustrate up-to-date collection of contaminants and adjustment of zones and access points.

## **10.7 BUDDY SYSTEM**

Personnel engaged in onsite activities will practice the "buddy system" to ensure the safety during this operation.

## **10.8 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS**

TtNUS personnel will provide MSDSs for chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of the chemicals used on site will be developed using Section 5.0 of the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location and will be available for anyone to review upon request.

## **10.9 COMMUNICATION**

TtNUS personnel will be working in close proximity to each other at NS Mayport. As a result and since two way radio communication will not be available, hand signals, voice commands, and line of site will provide sufficient means of communication. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations per Section 2.8 of this HASP.

External communication will be accomplished by using provided telephones at the site. External communication will primarily be used for the purpose of resource and emergency resource communications.

#### **10.10 SAFE WORK PERMITS**

The Exclusion Zone work conducted in support of this project will be performed using Safe Work Permits to guide and direct field crews on a task by task basis. An example of the Safe Work Permit to be used is illustrated in Figure 10-1. Partially completed Permits for Exclusion Zone tasks are included as Attachment III of this HASP. These work permits will be further supported by the daily meetings conducted during their generation. This effort will ensure the site-specific considerations and changing conditions are incorporated into the planning effort.

Use of these permits will provide the communication line for reviewing protective measures and hazards associated with each operation. This HASP will be used as the primary reference for selecting levels of protection and control measures. The work permit will take precedence over the HASP when more conservative measures are required based on specific site conditions.

The FOL and/or the SSO will be responsible for completing the safe work permit and issuing them to the appropriate parties. Site personnel at the end of each day's activity will turn in the permit(s) used for that day to the SSO. The permits will be maintained as part of the permanent project files attesting to safety and health measures employed for a given task at a given time and place. Any problems encountered with the protective measures required should be documented on the permit and brought to the attention of the SSO.

**FIGURE 10-1  
SAFE WORK PERMIT**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- II. Primary Hazards: Potential hazards associated with this task include  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted ☐ Yes ☐ No Initials of Inspector \_\_\_\_\_ TtNUS  
 Equipment Inspection required ☐ Yes ☐ No Initials of Inspector \_\_\_\_\_ TtNUS

**SECTION II: General Safety Requirements** (To be filled in by permit issuer)

- V. Protective equipment required **Respiratory equipment required**  
 Level D ☒ Level B ☐ Yes ☐ Specify on the reverse  
 Level C ☐ Level A ☐ No ☒  
 Modifications/Exceptions: None anticipated

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Primary Route of Exposure/Hazard: \_\_\_\_\_  
 \_\_\_\_\_

**(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)**

**VII. Additional Safety Equipment/Procedures**

- |   |  |
|---|--|
| Hard-hat ..... <input type="checkbox"/> Yes <input type="checkbox"/> No                     | Hearing Protection (Plugs/Muffs)..... <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses ..... <input type="checkbox"/> Yes <input type="checkbox"/> No               | Safety belt/harness..... <input type="checkbox"/> Yes <input type="checkbox"/> No              |
| Chemical/splash goggles..... <input type="checkbox"/> Yes <input type="checkbox"/> No       | Radio/Cellular Phone..... <input type="checkbox"/> Yes <input type="checkbox"/> No             |
| Splash Shield..... <input type="checkbox"/> Yes <input type="checkbox"/> No                 | Barricades ..... <input type="checkbox"/> Yes <input type="checkbox"/> No                      |
| Splash suits/coveralls..... <input type="checkbox"/> Yes <input type="checkbox"/> No        | Gloves (Type – _____) ..... <input type="checkbox"/> Yes <input type="checkbox"/> No           |
| Impermeable apron ..... <input type="checkbox"/> Yes <input type="checkbox"/> No            | Work/rest regimen ..... <input type="checkbox"/> Yes <input type="checkbox"/> No               |
| Steel toe Work shoes or boots..... <input type="checkbox"/> Yes <input type="checkbox"/> No | Chemical Resistant Boot Covers ..... <input type="checkbox"/> Yes <input type="checkbox"/> No  |
| High Visibility vest..... <input type="checkbox"/> Yes <input type="checkbox"/> No          | Tape up/use insect repellent ..... <input type="checkbox"/> Yes <input type="checkbox"/> No    |
| First Aid Kit ..... <input type="checkbox"/> Yes <input type="checkbox"/> No                | Fire Extinguisher..... <input type="checkbox"/> Yes <input type="checkbox"/> No                |
| Safety Shower/Eyewash..... <input type="checkbox"/> Yes <input type="checkbox"/> No         | Other ..... <input type="checkbox"/> Yes <input type="checkbox"/> No                           |
- Modifications/Exceptions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**VIII. Site Preparation**

- |  | Yes                      | No                       | NA                       |
|--|--------------------------|--------------------------|--------------------------|
| Utility Locating and Excavation Clearance completed.....                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Identified and Isolated (Splash and containment barriers).....            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... ☐ Yes ☐ No  
*If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

- X. Special instructions, precautions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

## 11.0 CONFINED SPACE ENTRY

It is not anticipated, under the proposed scope of work, that confined space and permit-required confined space activities will be conducted. **Therefore, personnel under the provisions of this HASP are not allowed, under any circumstances, to enter confined spaces.** A confined space is defined as an area which has one or more of the following characteristics:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

A Permit-Required Confined Space is one that:

- Contains or has a potential to contain a hazardous atmosphere.
- Contains a material that has the potential to engulf an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
- Contains any other recognized, serious, safety or health hazard.

For further information on confined space, consult the Health and Safety Guidance Manual or call the PHSO. If confined space operations are to be performed as part of the scope of work, detailed procedures and training requirements will have to be addressed.

## 12.0 MATERIALS AND DOCUMENTATION

The TtNUS FOL shall ensure the following materials/documents are taken to the project site and used when required.

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- Material Safety Data Sheets for the chemicals brought on site, including decon solutions, fuels, lime, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (posted in the site trailers)
- Training/Medical Surveillance Documentation Form (Blank)
- Emergency Reference Information (Section 2.0, extra copy for posting)

### 12.1 MATERIALS TO BE POSTED OR MAINTAINED AT THE SITE

The following documentation is to be posted or maintained at the site for quick reference purposes. In situations where posting these documents is not feasible, (such as no office trailer), these documents should be separated and immediately accessible.

**Chemical Inventory Listing (posted)** - This list represents the chemicals brought on-site, including decontamination solutions, sample preservations, fuel, etc.. This list should be posted in a central area.

**Material Safety Data Sheets (MSDS) (maintained)** - The MSDSs should also be in a central area accessible to the site personnel. These documents should match the listings on the chemical inventory list for substances used on-site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.



**The OSHA Job Safety & Health Protection Poster (posted)** - this poster, as directed by 29 CFR 1903.2 (a)(1), should be conspicuously posted in places where notices to employees are normally posted. Each FOL shall ensure that this poster is not defaced, altered, or covered by other material.

**Site Clearance (maintained)** - This list is found within the training section of the HASP (See Figure 8-2). This list identifies the site personnel, dates of training (including site-specific training), and medical surveillance. The list indicates clearance and status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

**Emergency Phone Numbers and Directions to the Hospital(s) (posted)** - This list of numbers and directions will be maintained at the phone communications points and in each site vehicle.

**Medical Data Sheets/Cards (maintained)** - Medical Data Sheets will be filled out by on-site personnel and filed in a central location. The Medical Data Sheet will accompany any injury or illness requiring medical attention to the medical facility. a copy of this sheet or a wallet card will be given to all personnel to be carried on their person.

**Hearing Conservation Standard (29 CFR 1910.95) (posted)** - this standard will be posted anytime hearing protection or other noise abatement procedures are employed.

**Personnel Monitoring (maintained)** - The results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.

**Placards and Labels (maintained)** - Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using DOT placards and acceptable (Hazard Communication 29 CFR 1910.1200(f)) labels.

The purpose of maintaining or posting this information, as stated above, is to allow site personnel quick access. Variations concerning location and methods of presentation are acceptable, providing the objection is accomplished.

## 13.0 GLOSSARY

ACGIH	American Conference of Governmental Industrial Hygienists
APR	Air Purifying Respirators
CFR	Code of Federal Regulations
CNS	Central Nervous System
CRZ	Contamination Reduction Zone
DOD	Department of Defense
DOT	Department of Transportation
EPA	Environmental Protection Agency
eV	electron Volts
FID	Flame Ionization Detector
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
LEL/O <sub>2</sub>	Lower Explosive Limit/Oxygen
N/A	Not Available
NIOSH	National Institute Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PEL	Permissible Exposure Limit
PHSO	Project Health and Safety Officer
PID	Photo Ionization Detector
PPE	Personal Protective Equipment
PVC	Poly Vinyl Chloride
SAP	Sampling and Analysis Plan
SCBA	Self Contained Breathing Apparatus
SSO	Site Safety Officer
STEL	Short Term Exposure Limit
TOM	Task Order Manager
TWA	Time Weighted Average
UV	Ultraviolet
WP	Work Plan

**ATTACHMENT I**

**INJURY/ILLNESS PROCEDURE  
AND REPORT FORM**

## **TETRA TECH NUS, INC.**

### **INJURY/ILLNESS PROCEDURE WORKER'S COMPENSATION PROGRAM**

---

#### **WHAT YOU SHOULD DO IF YOU ARE INJURED OR DEVELOP AN ILLNESS AS A RESULT OF YOUR EMPLOYMENT:**

- Stop work as needed to ensure no further harm is done.
- If injury is minor, obtain appropriate first aid treatment.
- If injury or illness is severe or life threatening, obtain professional medical treatment at the nearest hospital emergency room. Check with your office location or project health and safety plan for specific instructions.
- If incident involves an injury, illness, or chemical exposure on a project work site, follow instructions in the Health & Safety Plan.
- Immediately report any injury or illness to your supervisor or office manager. In addition, you must contact your Human Resources representative, Marilyn Duffy at (412) 921-8475, and the Corporate Health and Safety Manager, Matt Soltis at (412) 921-8912 within 24 hours of the injury. You will be required to complete an [Injury/Illness Report](#). You may also be required to participate in a more detailed investigation with the Health Sciences Department.
- In the event of a serious near-miss incident, a "Serious Near Miss Report" (Form AR-2, available online at <https://go2.tetrattech.com> under "Departments", "Health and Safety", "Accident Reporting Procedures", hyperlink for "Serious Near Miss Report") must be completed and faxed to the Corporate Health and Safety Manager within 48 hours.
- If further medical treatment is needed, our insurance carrier, ACE, will provide information on the authorized providers customized to the location of the injured employee. You can find this information by accessing the website of ACE's claims handler, ESIS, at : [www.esis.com](http://www.esis.com). These providers are to be used for treatment of Worker's Compensation injuries subject to the laws of the state in which you work.

#### **ADDITIONAL QUESTIONS REGARDING WORKER'S COMPENSATION:**

Contact your local Human Resources representative (Marilyn Duffy), Corporate Health and Safety Manager (Matt Soltis), or Corporate Administration in Pasadena, California, at (626) 351-4664.

Worker's compensation is a state-mandated program that provides medical and disability benefits to employees who become disabled due to job related injury or illness. Tetra Tech, Inc. and its subsidiaries pay premiums on behalf of their employees. This program is based on a no-fault system, and benefits are provided for covered events as an exclusive remedy to the injured employee regardless of fault. The types of injuries or illnesses covered and the amount of

benefits paid are regulated by the state worker's compensation boards and vary from state to state. Corporate Administration in Pasadena is responsible for administering the Company's worker's compensation program. The following is a general explanation of worker's compensation provided in the event that you become injured or develop an illness as a result of your employment with Tetra Tech or any of its subsidiaries. Please be aware that the term used for worker's compensation varies from state to state.

### **WHO IS COVERED:**

All employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits from the first day of work. All employees must follow the above injury/illness reporting procedures. If you are working out-of-state and away from your home office, you are still eligible for worker's compensation benefits.

Consultants, independent contractors, and employees of subcontractors and employees from temporary employment agencies are not covered by Tetra Tech's Worker's Compensation plan.

### **WHAT IS COVERED:**

If you are injured or develop an illness caused by your employment, worker's compensation benefits are available to you subject to the laws of the state you work in. Injuries do not have to be serious; even injuries treated by first aid practices are covered and must be reported.



**TETRA TECH, INC.**

**ACCIDENT AND ILLNESS INVESTIGATION REPORT**

To: \_\_\_\_\_  
Subsidiary Health and Safety Representative

Prepared by: \_\_\_\_\_

Position: \_\_\_\_\_

cc: \_\_\_\_\_  
Workers Compensation Administrator

Office: \_\_\_\_\_

Project name: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Project number: \_\_\_\_\_

Fax number: \_\_\_\_\_

**Information Regarding Injured or Ill Employee**

Name: \_\_\_\_\_

Office: \_\_\_\_\_

Home address: \_\_\_\_\_

Gender: M ☐ F ☐ No. of dependents: \_\_\_\_\_

Marital status: \_\_\_\_\_

Home telephone number: \_\_\_\_\_

Date of birth: \_\_\_\_\_

Occupation (regular job title): \_\_\_\_\_

Social security number: \_\_\_\_\_

Department: \_\_\_\_\_

**Date of Accident:** \_\_\_\_\_

**Time of Accident:** \_\_\_\_\_ a.m. ☐ p.m. ☐

**Time Employee Began Work:** \_\_\_\_\_

☐ Check if time cannot be determined

**Location of Incident**

Street address: \_\_\_\_\_

City, state, and zip code: \_\_\_\_\_

County: \_\_\_\_\_

Was place of accident or exposure on employer's premises? Yes ☐ No ☐

**Information About the Incident**

**What was the employee doing just before the incident occurred?** Describe the activity as well as the tools, equipment, or material the employee was using. Be specific. Examples: "Climbing a ladder while carrying roofing materials"; "Spraying chlorine from hand sprayer"; "Daily computer key-entry"

**What Happened?** Describe how the injury occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time"

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.



**TETRA TECH, INC.**

**ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)**

**Information About the Incident (Continued)**

**What was the injury or illness?** Describe the part(s) of the body affected and how it was affected. Be more specific than "hurt," "pain," or "sore." Examples "Strained back"; "Chemical burn, right hand"; "Carpal tunnel syndrome, left wrist"

**Describe the Object or Substance that Directly Harmed the Employee:** Examples: "Concrete floor"; "Chlorine"; "Radial arm saw." If this question does not apply to the incident, write "Not applicable."

Did the employee die? Yes ☐ No ☐ Date of death: \_\_\_\_\_

Was employee performing regular job duties? Yes ☐ No ☐

Was safety equipment provided? Yes ☐ No ☐ Was safety equipment used? Yes ☐ No ☐

**Note: Attach any police reports or related diagrams to this report.**

**Witness** (Attach additional sheets for other witnesses.)

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Street address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_

**Medical Treatment Required?** ☐ Yes ☐ No ☐ First aid only

Name of physician or health care professional: \_\_\_\_\_

If treatment was provided away from the work site, provide the information below.

Facility name: \_\_\_\_\_

Street address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Was the employee treated in an emergency room? ☐ Yes ☐ No

Was the employee hospitalized over night as an in-patient? ☐ Yes ☐ No

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.



**TETRA TECH, INC.**

**ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)**

**Corrective Action(s) Taken by Unit Reporting the Accident:**

**Corrective Action Still to be Taken (by whom and when):**

**Name of Tetra Tech employee the injury or illness was first reported to:** \_\_\_\_\_

**Date of Report:** \_\_\_\_\_ **Time of Report:** \_\_\_\_\_

I have reviewed this investigation report and agree, to the best of my recollection, with its contents.

\_\_\_\_\_  
Printed Name of Injured Employee

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Signature of Injured Employee

\_\_\_\_\_  
Date

The signatures provided below indicate that appropriate personnel have been notified of the incident.

Title	Printed Name	Signature	Telephone Number	Date
Office Manager				
Project Manager				
Site Safety Coordinator or Office Health and Safety Representative				

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.





**TETRA TECH, INC.**

**ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)**

**To Be Completed by the Subsidiary Health and Safety Representative**

**Classification of Incident:**

☐ Injury    ☐ Illness

**Result of Incident:**

- ☐ First aid only  
☐ Days away from work  
☐ Remained at work but incident resulted in job transfer or work restriction  
☐ Incident involved days away and job transfer or work restriction  
☐ Medical treatment only

No. of days away from work \_\_\_\_\_

Date employee left work \_\_\_\_\_

Date employee returned to work \_\_\_\_\_

No. of days placed on restriction or job transfer: \_\_\_\_\_

OSHA Recordable Case Number \_\_\_\_\_

**To Be Completed by Human Resources**

Social security number: \_\_\_\_\_

Date of hire: \_\_\_\_\_ Hire date for current job: \_\_\_\_\_

Wage information: \$ \_\_\_\_\_ per ☐ Hour ☐ Day ☐ Week ☐ Month

Position at time of hire: \_\_\_\_\_

Current position: \_\_\_\_\_ Shift hours: \_\_\_\_\_

State in which employee was hired: \_\_\_\_\_

Status: ☐ Full-time    ☐ Part-time    Hours per week: \_\_\_\_\_ Days per week: \_\_\_\_\_

Temporary job end date: \_\_\_\_\_

**To Be Completed during Report to Workers Compensation Carrier**

Date reported: \_\_\_\_\_ Reported by: \_\_\_\_\_

Confirmation number: \_\_\_\_\_

Name of contact: \_\_\_\_\_

Field office of claims adjuster: \_\_\_\_\_

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

**ATTACHMENT II**

**MEDICAL DATA SHEET**

## MEDICAL DATA SHEET

This Medical Data Sheet must be completed by all on-site personnel and kept in a central location during the execution of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project \_\_\_\_\_

Name \_\_\_\_\_ Home Telephone \_\_\_\_\_

Address \_\_\_\_\_

Age \_\_\_\_\_ Height \_\_\_\_\_ Weight \_\_\_\_\_

Name of Next Kin \_\_\_\_\_

Drug or other Allergies \_\_\_\_\_

Particular Sensitivities \_\_\_\_\_

Do You Wear Contacts? \_\_\_\_\_

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals \_\_\_\_\_

What medications are you presently using? \_\_\_\_\_

Do you have any medical restrictions? \_\_\_\_\_

Name, Address, and Phone Number of personal physician: \_\_\_\_\_

I am the individual described above. I have read and understand this HASP.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**ATTACHMENT III**

**SAFE WORK PERMITS**

**SAFE WORK PERMIT  
MOBILIZATION AND DEMOBILIZATION  
NAVAL STATION MAYPORT  
JACKSONVILLE, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

- I. **Work limited to the following (description, area, equipment used):** Mob/Demob
- II. **Primary Hazards::** lifting; cuts and lacerations; pinches and compressions; slip, trip and falls; ambient temperature extremes; insect and animal bites; and inclement weather
- III. **Field Crew:** \_\_\_\_\_
- IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector \_\_\_\_\_ TtNUS  
**Equipment Inspection required** ☐ Yes ☐ No Initials of Inspector \_\_\_\_\_ TtNUS

- V. **Protective equipment required** **Respiratory equipment required**  
Level D ☒ Level B ☐ Yes ☐ Specify on the reverse  
Level C ☐ Level A ☐ No ☒  
Modifications/Exceptions: \_\_\_\_\_

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
<u>None expected during this task</u>	_____	_____	_____
_____	_____	_____	_____

**Primary Route(s) of Exposure/Hazard:** NA

**(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)**

**VII. Additional Safety Equipment/Procedures**

Hard-hat .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs) .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/splash goggles .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Radio/Cellular Phone .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Splash shield.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Barricades.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Gloves (Type – Work ) .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Work/rest regimen.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe work shoes or boots....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical resistant boot covers .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
High visibility vest.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Fire extinguisher .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Other .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Modifications/Exceptions: _____			

**VIII. Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.)..... ☐ Yes ☒ No  
*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

- X. **Special instructions, precautions:** Use safe lifting/carrying techniques. Use additional PPE based on the hazards that are associated with each task. Use work gloves when cutting boxes or handling sharp tools/cutting devices. Safety glasses will be required.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
SOIL BORING  
NAVAL STATION MAYPORT  
JACKSONVILLE, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

- I. **Work limited to the following (description, area, equipment used):** Soil boring and sub-surface soil and groundwater sampling
- II. **Primary Hazards:** Chemical exposure; contamination transfer; heavy equipment hazards; noise; energized systems; lifting; slip, trip and fall; cuts and lacerations; vehicular and foot traffic; insect/animal bites, inclement weather
- III. **Field Crew:** \_\_\_\_\_
- IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector TtNUS  
**Equipment Inspection required** ☐ Yes ☐ No Initials of Inspector TtNUS

- V. **Protective equipment required** **Respiratory equipment required**  
Level D ☒ Level B ☐ Yes ☐ Specify on the reverse  
Level C ☐ Level A ☐ No ☒  
Modifications/Exceptions: \_\_\_\_\_

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
VOCs (BETX) _____	PID w/ 10.6 eV lamp _____	sustained readings(> 1 minute) _____	evacuate area until _____
SVOC naphthalene _____	_____	above 50 ppm _____	readings return to _____
_____	_____	_____	background _____
_____	_____	_____	_____

**Primary Route(s) of Exposure/Hazard:** inhalation

**(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)**

**VII. Additional Safety Equipment/Procedures**

Hard-hat .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs) .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/splash goggles .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Radio/Cellular Phone .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Splash shield .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Barricades .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Splash suits/coveralls .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type – nitrile/work) .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe work shoes or boots .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical resistant boot covers .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
High visibility vest .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fire extinguisher .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Other .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Modifications/Exceptions: <u>Driller and helper will wear impermeable apron when handling drill augers.</u>			

**VIII. Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.)..... ☐ Yes ☒ No  
*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

- X. **Special instructions, precautions:** Use safe lifting/carrying techniques. Inspect equipment prior to use. Ensure emergency stop devices are functional and test daily.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
GROUNDWATER SAMPLING  
NAVAL STATION MAYPORT  
JACKSONVILLE, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

I. **Work limited to the following (description, area, equipment used):** Groundwater from existing wells

II. **Primary Hazards:** Chemical exposure; contamination transfer; heavy equipment hazards; noise; energized systems; lifting; slip, trip and fall; cuts and lacerations; vehicular and foot traffic; insect/animal bites, inclement weather

III. **Field Crew:** \_\_\_\_\_

IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector TtNUS  
**Equipment Inspection required** ☐ Yes ☐ No Initials of Inspector TtNUS

V. **Protective equipment required**

Level D ☒ Level B ☐

Level C ☐ Level A ☐

Modifications/Exceptions: \_\_\_\_\_

**Respiratory equipment required**

Yes ☐ Specify on the reverse

No ☒

VI. **Chemicals of Concern**

VOCs (BETX)

SVOC naphthalene

\_\_\_\_\_

\_\_\_\_\_

**Hazard Monitoring**

PID w/ 10.6 eV lamp

\_\_\_\_\_

\_\_\_\_\_

**Action Level(s)**

sustained readings(> 1 minute)

above 50 ppm

\_\_\_\_\_

\_\_\_\_\_

**Response Measures**

evacuate area until

readings return to

background

\_\_\_\_\_

**Primary Route(s) of Exposure/Hazard:** inhalation

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat ..... ☐ Yes ☐ No

Safety Glasses ..... ☒ Yes ☐ No

Chemical/splash goggles ..... ☐ Yes ☒ No

Splash shield ..... ☐ Yes ☒ No

Splash suits/coveralls ..... ☒ Yes ☐ No

Impermeable apron ..... ☐ Yes ☐ No

Steel toe work shoes or boots .... ☒ Yes ☐ No

High visibility vest ..... ☐ Yes ☐ No

First Aid Kit ..... ☒ Yes ☐ No

Safety Shower/Eyewash ..... ☐ Yes ☒ No

Modifications/Exceptions: Driller and helper will wear impermeable apron when handling drill augers.

Hearing Protection (Plugs/Muffs) ..... ☐ Yes ☐ No

Safety belt/harness ..... ☐ Yes ☒ No

Radio/Cellular Phone ..... ☐ Yes ☐ No

Barricades ..... ☐ Yes ☐ No

Gloves (Type – nitrile/work) ..... ☒ Yes ☐ No

Work/rest regimen ..... ☐ Yes ☐ No

Chemical resistant boot covers ..... ☐ Yes ☐ No

Tape up/use insect repellent ..... ☐ Yes ☐ No

Fire extinguisher ..... ☐ Yes ☐ No

Other ..... ☐ Yes ☐ No

VIII. **Site Preparation**

Utility Locating and Excavation Clearance completed ..... ☐ Yes ☐ No ☐ NA

Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place ..... ☐ Yes ☐ No ☐ NA

Physical Hazards Identified and Isolated (Splash and containment barriers) ..... ☐ Yes ☐ No ☐ NA

Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc) ..... ☐ Yes ☐ No ☐ NA

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.) ..... ☐ Yes ☒ No

*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

X. **Special instructions, precautions:** Use safe lifting/carrying techniques. Inspect equipment prior to use. Ensure emergency stop devices are functional and test daily.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
SURFACE SOIL SAMPLING  
NAVAL STATION MAYPORT  
JACKSONVILLE, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

- I. **Work limited to the following (description, area, equipment used):** Surface soil sampling and IDW
- II. **Primary Hazards:** Potential hazards associated with this task: chemicals; transfer of contamination; slips, trips and falls; lifting; strains and muscle pulls from manual lifting; animal and insect bites, and inclement weather
- III. **Field Crew:** \_\_\_\_\_
- IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector \_\_\_\_\_ TtNUS  
**Equipment Inspection required** ☐ Yes ☐ No Initials of Inspector \_\_\_\_\_ TtNUS

V. **Protective equipment required**

Level D ☒ Level B ☐  
Level C ☐ Level A ☐

Modifications/Exceptions: \_\_\_\_\_

**Respiratory equipment required**

Yes ☐ Specify on the reverse  
No ☐

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
<u>None anticipated</u>	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**Primary Route(s) of Exposure/Hazard:** absorption

(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

VII. **Additional Safety Equipment/Procedures**

Hard-hat ..... ☐ Yes ☐ No  
Safety Glasses ..... ☒ Yes ☐ No  
Chemical/Splash Goggles ..... ☐ Yes ☒ No  
Splash Shield ..... ☐ Yes ☒ No  
Splash Suits/Coveralls ..... ☐ Yes ☐ No  
Impermeable Apron ..... ☐ Yes ☒ No  
Steel Toe Work Shoes or Boots ..... ☒ Yes ☐ No  
High Visibility Vest ..... ☐ Yes ☐ No  
First Aid Kit ..... ☐ Yes ☐ No  
Safety Shower/Eyewash ..... ☐ Yes ☐ No

Modifications/Exceptions: \_\_\_\_\_

Hearing Protection (Plugs/Muffs) ..... ☐ Yes ☐ No  
Safety Belt/Harness ..... ☐ Yes ☒ No  
Radio/Cellular Phone ..... ☐ Yes ☐ No  
Barricades ..... ☐ Yes ☐ No  
Gloves (Type – Nitrile) ..... ☒ Yes ☐ No  
Work/rest regimen ..... ☐ Yes ☐ No  
Chemical Resistant Boot Covers ..... ☐ Yes ☒ No  
Tape/Insect Repellent ..... ☐ Yes ☐ No  
Fire Extinguisher ..... ☐ Yes ☐ No  
Other ..... ☐ Yes ☐ No

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.) ..... ☒ Yes ☐ No  
*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

- X. **Special instructions, precautions:** Use safe lifting/carrying techniques. Assume all media is contaminated and avoid contact through the use of safe work practices, PPE and decontamination.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_



**SAFE WORK PERMIT  
DECONTAMINATION  
NAVAL STATION MAYPORT  
JACKSONVILLE, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**I. Work limited to the following (description, area, equipment used):** Decontamination of the sampling equipment

**II. Primary Hazards:** Chemical exposure including decon fluids; lifting; vehicle and foot traffic; slip, trip and fall; and inclement weather/heat stress

**III. Field Crew:** \_\_\_\_\_

**IV. On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector TtNUS

**Equipment Inspection required** ☐ Yes ☐ No Initials of Inspector TtNUS

**V. Protective equipment required**

Level D ☒ Level B ☐

Level C ☐ Level A ☐

Modifications/Exceptions: \_\_\_\_\_

**Respiratory equipment required**

Yes ☐ Specify on the reverse

No ☐

**VI. Chemicals of Concern**

VOCS

SVOC

**Hazard Monitoring**

PID w/ 10.6 eV lamp

**Action Level(s)**

any readings

**Response Measures**

re-decon equipment

**Primary Route(s) of Exposure/Hazard:** absorption

**(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)**

**VII. Additional Safety Equipment/Procedures**

Hard-Hat ..... ☐ Yes ☐ No

Safety Glasses ..... ☒ Yes ☐ No

Chemical/Splash Goggles ..... ☐ Yes ☒ No

Splash Shield ..... ☐ Yes ☐ No

Splash Suits/Coveralls ..... ☐ Yes ☒ No

Impermeable apron ..... ☐ Yes ☐ No

Steel Toe Work Shoes or Boots ..... ☒ Yes ☐ No

High Visibility Vest ..... ☐ Yes ☒ No

First Aid Kit ..... ☐ Yes ☐ No

Safety Shower/Eyewash ..... ☐ Yes ☐ No

Modifications/Exceptions: \_\_\_\_\_

Hearing Protection (Plugs/Muffs) ..... ☐ Yes ☐ No

Safety Belt/Harness ..... ☐ Yes ☒ No

Radio/Cellular Phone ..... ☐ Yes ☐ No

Barricades ..... ☐ Yes ☒ No

Gloves (Type – Nitrile) ..... ☒ Yes ☐ No

Work/rest Regimen ..... ☐ Yes ☐ No

Chemical Resistant Boot Covers ..... ☐ Yes ☒ No

Tape/Insect Repellent ..... ☐ Yes ☐ No

Fire Extinguisher ..... ☐ Yes ☐ No

Other ..... ☐ Yes ☐ No

**VIII. Site Preparation**

Utility Locating and Excavation Clearance completed ..... ☐ Yes ☐ No ☐ NA

Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place ..... ☐ Yes ☐ No ☐ NA

Physical Hazards Identified and Isolated (Splash and containment barriers) ..... ☐ Yes ☐ No ☐ NA

Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc) ..... ☐ Yes ☐ No ☐ NA

**IX. Additional Permits required** (Hot work, confined space entry, excavation etc.) ..... ☐ Yes ☒ No

*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

**X. Special instructions, precautions:** Review and follow the instructions on the MSDS for the decontamination fluids.

Follow guidance in Table 5-1 for PPE for different decontamination tasks.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
IDW  
NAVAL STATION MAYPORT  
JACKSONVILLE, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

I. **Work limited to the following (description, area, equipment used):** IDW management, moving and storage

II. **Primary Hazards:** Potential hazards associated with this task: slip, trip and fall; vehicular and foot traffic; insect/ animal bites or stings, poisonous plants; and inclement weather.

III. **Field Crew:** \_\_\_\_\_

IV. **On-site Inspection conducted** ☐ Yes ☐ No Initials of Inspector \_\_\_\_\_ TtNUS

**Equipment Inspection required** ☐ Yes ☐ No Initials of Inspector \_\_\_\_\_ TtNUS

V. **Protective equipment required**

Level D ☒ Level B ☐

Level C ☐ Level A ☐

Modifications/Exceptions: \_\_\_\_\_

**Respiratory equipment required**

Yes ☐ Specify on the reverse

No ☒

VI. **Chemicals of Concern**

None expected during this task

**Hazard Monitoring**

**Action Level(s)**

**Response Measures**

**Primary Route(s) of Exposure/Hazard:** NA

**(Note to FOL and/or SSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)**

VII. **Additional Safety Equipment/Procedures**

Hard-hat ..... ☐ Yes ☐ No

Safety Glasses ..... ☐ Yes ☐ No

Chemical/splash goggles ..... ☐ Yes ☒ No

Splash Shield ..... ☐ Yes ☒ No

Splash suits/coveralls ..... ☐ Yes ☐ No

Impermeable apron ..... ☐ Yes ☒ No

Steel toe work shoes or boots ..... ☒ Yes ☐ No

High Visibility vest ..... ☐ Yes ☐ No

First Aid Kit ..... ☐ Yes ☐ No

Safety Shower/Eyewash ..... ☐ Yes ☒ No

Modifications/Exceptions: \_\_\_\_\_

Hearing Protection (Plugs/Muffs) ..... ☐ Yes ☒ No

Safety belt/harness ..... ☐ Yes ☒ No

Radio/Cellular Phone ..... ☐ Yes ☐ No

Barricades ..... ☐ Yes ☒ No

Gloves (Type – work ) ..... ☒ Yes ☐ No

Work/rest regimen ..... ☐ Yes ☐ No

Chemical Resistant Boot Covers ..... ☐ Yes ☒ No

Tape up/use insect repellent ..... ☐ Yes ☐ No

Fire Extinguisher ..... ☐ Yes ☒ No

Other ..... ☐ Yes ☐ No

VIII. **Site Preparation**

Utility Locating and Excavation Clearance completed ..... ☐ Yes ☐ No ☐ NA

Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place ..... ☐ Yes ☐ No ☐ NA

Physical Hazards Identified and Isolated (Splash and containment barriers) ..... ☐ Yes ☐ No ☐ NA

Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc) ..... ☐ Yes ☐ No ☐ NA

IX. **Additional Permits required** (Hot work, confined space entry, excavation etc.) ..... ☐ Yes ☒ No

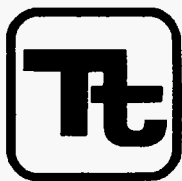
*If yes, SSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

X. **Special instructions, precautions:** Inspect roll off boxes and drums used to store IDW prior to use. Cover IDW containers and roll off boxes to prevent unauthorized entry and filling with rain water. Do not over load. Disperse IDW evenly. Use proper lifting practices and obtain assistance when handling heavy drums.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

## **ATTACHMENT IV**

# **STANDARD OPERATING PROCEDURE FOR UTILITY LOCATING AND EXCAVATION CLEARANCE**



TETRA TECH NUS, INC.

# STANDARD OPERATING PROCEDURES

Number	HS-1.0	Page	1 of 15
Effective Date	12/03	Revision	2
Applicability	Tetra Tech NUS, Inc.		
Prepared	Health & Safety		
Approved	D. Senovich <i>[Signature]</i>		

Subject  
UTILITY LOCATING AND EXCAVATION CLEARANCE

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## 1.0 PURPOSE

Utilities such as electric service lines, natural or propane gas lines, water and sewage lines, telecommunications, and steam lines are very often in the immediate vicinity of work locations. Contact with underground or overhead utilities can have serious consequences including employee injury/fatality, property and equipment damage, substantial financial impacts, and loss of utility service to users.

The purpose of this procedure is to provide minimum requirements and technical guidelines regarding the appropriate procedures to be followed when performing subsurface and overhead utility locating services. It is the policy of Tetra Tech NUS, Inc. (TtNUS) to provide a safe and healthful work environment for the protection of our employees. The purpose of this Standard Operating Procedure (SOP) is to aid in achieving the objectives of this policy, to present the acceptable procedures pertaining to utility locating and excavation clearance activities, and to present requirements and restrictions relevant to these types of activities. This SOP must be reviewed by any employee potentially involved with underground or overhead utility locating and avoidance activities.

## 2.0 SCOPE

This procedure applies to all TtNUS field activities where there may be potential contact with underground or overhead utilities. This procedure provides a description of the principles of operation, instrumentation, applicability, and implementability of typical methods used to determine the presence and avoidance of contact with utility services. This procedure is intended to assist with work planning and scheduling, resource planning, field implementation, and subcontractor procurement. Utility locating and excavation clearance requires site-specific information prior to the initiation of any such activities on a specific project. This SOP is not intended to provide a detailed description of methodology and instrument operation. Specialized expertise during both planning and execution of several of the methods presented may also be required.

## 3.0 GLOSSARY

Electromagnetic Induction (EMI) Survey - A geophysical exploration method whereby electromagnetic fields are induced in the ground and the resultant secondary electromagnetic fields are detected as a measure of ground conductivity.

Magnetometer – A device used for precise and sensitive measurements of magnetic fields.

Magnetic Survey – A geophysical survey method that depends on detection of magnetic anomalies caused by the presence of buried ferromagnetic objects.

Metal Detection – A geophysical survey method that is based on electromagnetic coupling caused by underground conductive objects.

Vertical Gradiometer – A magnetometer equipped with two sensors that are vertically separated by a fixed distance. It is best suited to map near surface features and is less susceptible to deep geologic features.

Ground Penetrating Radar – Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture.

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#### 4.0 RESPONSIBILITIES

Project Manager (PM)/Task Order Manager (TOM) - Responsible for ensuring that all field activities are conducted in accordance with this procedure.

Site Manager (SM)/Field Operations Leader (FOL) - Responsible for the onsite verification that all field activities are performed in compliance with approved SOPs or as otherwise directed by the approved project plan(s).

Site Health & Safety Officer (SHSO) – Responsible to provide technical assistance and verify full compliance with this SOP. The SHSO is also responsible for reporting any deficiencies to the Corporate Health and Safety Manager (HSM) and to the PM/TOM.

Health & Safety Manager (HSM) – Responsible for preparing, implementing, and modifying corporate health and safety policy and this SOP.

Site Personnel – Responsible for performing their work activities in accordance with this SOP and the TtNUS Health and Safety Policy.

#### 5.0 PROCEDURES

This procedure addresses the requirements and technical procedures that must be performed to minimize the potential for contact with underground and overhead utility services. These procedures are addressed individually from a buried and overhead standpoint.

##### 5.1 Buried Utilities

Buried utilities present a heightened concern because their location is not typically obvious by visual observation, and it is common that their presence and/or location is unknown or incorrectly known on client properties. This procedure must be followed prior to beginning any subsurface probing or excavation that might potentially be in the vicinity of underground utility services. In addition, the Utility Clearance Form (Attachment 3) must be completed for every location or cluster of locations where intrusive activities will occur.

Where the positive identification and de-energizing of underground utilities cannot be obtained and confirmed using the following steps, the PM/TOM is responsible for arranging for the procurement of a qualified, experienced, utility locating subcontractor who will accomplish the utility location and demarcation duties specified herein.

1. A comprehensive review must be made of any available property maps, blue lines, or as-builts prior to site activities. Interviews with local personnel familiar with the area should be performed to provide additional information concerning the location of potential underground utilities. Information regarding utility locations shall be added to project maps upon completion of this exercise.
- 2., A visual site inspection must be performed to compare the site plan information to actual field conditions. Any findings must be documented and the site plan/maps revised. The area(s) of proposed excavation or other subsurface activities must be marked at the site in white paint or pin flags to identify those locations of the proposed intrusive activities. The site inspection should focus on locating surface indications of potential underground utilities. Items of interest include the presence of nearby area lights, telephone service, drainage grates, fire hydrants, electrical service vaults/panels, asphalt/concrete scars and patches, and topographical depressions. Note the location of any emergency shut off switches. Any additional information regarding utility

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locations shall be added to project maps upon completion of this exercise and returned to the PM/TOM.

3. If the planned work is to be conducted on private property (e.g., military installations, manufacturing facilities, etc.) the FOL must identify and contact appropriate facility personnel (e.g., public works or facility engineering) before any intrusive work begins to inquire about (and comply with) property owner requirements. It is important to note that private property owners may require several days to several weeks advance notice prior to locating utilities.
4. If the work location is on public property, the state agency that performs utility clearances must be notified (see Attachment 1). State "one-call" services must be notified prior to commencing fieldwork per their requirements. Most one-call services require, by law, 48- to 72-hour advance notice prior to beginning any excavation. Such services typically assign a "ticket" number to the particular site. This ticket number must be recorded for future reference and is valid for a specific period of time, but may be extended by contacting the service again. The utility service will notify utility representatives who then mark their respective lines within the specified time frame. It should be noted that most military installations own their own utilities but may lease service and maintenance from area providers. Given this situation, "one call" systems may still be required to provide location services on military installations.
5. Utilities must be identified and their locations plainly marked using pin flags, spray paint, or other accepted means. The location of all utilities must be noted on a field sketch for future inclusion on project maps. Utility locations are to be identified using the following industry-standard color code scheme, unless the property owner or utility locator service uses a different color code:

white	excavation/subsurface investigation location
red	electrical
yellow	gas, oil, steam
orange	telephone, communications
blue	water, irrigation, slurry
green	sewer, drain
6. Where utility locations are not confirmed with a high degree of confidence through drawings, schematics, location services, etc., the work area must be thoroughly investigated prior to beginning the excavation. In these situations, utilities must be identified using safe and effective methods such as passive and intrusive surveys, or the use of non-conductive hand tools. Also, in situations where such hand tools are used, they should always be used in conjunction with suitable detection equipment, such as the items described in Section 6.0 of this SOP. Each method has advantages and disadvantages including complexity, applicability, and price. It also should be noted that in some states, initial excavation is required by hand to a specified depth.
7. At each location where trenching or excavating will occur using a backhoe or other heavy equipment, and where utility identifications and locations cannot be confirmed prior to groundbreaking, the soil must be probed using a device such as a tile probe which is made of non-conductive material such as fiberglass. If these efforts are not successful in clearing the excavation area of suspect utilities, hand shoveling must be performed for the perimeter of the intended excavation.
8. All utilities uncovered or undermined during excavation must be structurally supported to prevent potential damage. Unless necessary as an emergency corrective measure, TtNUS shall not make any repairs or modifications to existing utility lines without prior permission of the utility owner, property owner, and Corporate HSM. All repairs require that the line be locked-out/tagged-out prior to work.

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## 5.2 Overhead Power Lines

If it is necessary to work within the minimum clearance distance of an overhead power line, the overhead line must be de-energized and grounded, or re-routed by the utility company or a registered electrician. If protective measures such as guarding, isolating, or insulating are provided, these precautions must be adequate to prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

The following table provides the required minimum clearances for working in proximity to overhead power lines.

<u>Nominal Voltage</u>	<u>Minimum Clearance</u>
0 -50 kV	10 feet, or one mast length; whichever is greater
50+ kV	10 feet plus 4 inches for every 10 kV over 50 kV or 1.5 mast lengths; whichever is greater

## 6.0 UNDERGROUND LOCATING TECHNIQUES

A variety of supplemental utility locating approaches are available and can be applied when additional assurance is needed. The selection of the appropriate method(s) to employ is site-specific and should be tailored to the anticipated conditions, site and project constraints, and personnel capabilities.

### 6.1 Geophysical Methods

Geophysical methods include electromagnetic induction, magnetics, and ground penetrating radar. Additional details concerning the design and implementation of electromagnetic induction, magnetics, and ground penetrating radar surveys can be found in one or more of the TtNUS SOPs included in the References (Section 8.0).

#### **Electromagnetic Induction**

Electromagnetic Induction (EMI) line locators operate either by locating a background signal or by locating a signal introduced into the utility line using a transmitter. A utility line acts like a radio antenna, producing electrons, which can be picked up with a radiofrequency receiver. Electrical current carrying conductors have a 60HZ signal associated with them. This signal occurs in all power lines regardless of voltage. Utilities in close proximity to power lines or used as grounds may also have a 60HZ signal, which can be picked up with an EM receiver. A typical example of this type of geophysical equipment is an EM-61.

EMI locators specifically designed for utility locating use a special signal that is either indirectly induced onto a utility line by placing the transmitter above the line or directly induced using an induction clamp. The clamp induces a signal on the specific utility and is the preferred method of tracing since there is little chance of the resulting signals being interfered with. A good example of this type of equipment is the Schonstedt® MAC-51B locator. The MAC-51B performs inductively traced surveys, simple magnetic locating, and traced nonmetallic surveys.

When access can be gained inside a conduit to be traced, a flexible insulated trace wire can be used. This is very useful for non-metallic conduits but is limited by the availability of gaining access inside the pipe.



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## **Magnetics**

Magnetic locators operate by detecting the relative amounts of buried ferrous metal. They are incapable of locating or identifying nonferrous utility lines but can be very useful for locating underground storage tanks (UST's), steel utility lines, and buried electrical lines. A typical example of this type of equipment is the Schonstedt® GA-52Cx locator. The GA-52Cx is capable of locating 4-inch steel pipe up to 8 feet deep.

Non-ferrous lines are often located by using a typical plumbing tool (snake) fed through the line. A signal is then introduced to the snake that is then traced.

## **Ground Penetrating Radar**

Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture. In general, an object which is harder than the surrounding soil will reflect a stronger signal. Utilities, tunnels, UST's, and footings will reflect a stronger signal than the surrounding soil. Although this surface detection method may determine the location of a utility, this method does not specifically identify utilities (i.e., water vs. gas, electrical vs. telephone); hence, verification may be necessary using other methods. This method is somewhat limited when used in areas with clay soil types or with a high water table.

## **6.2 Passive Detection Surveys**

### **Acoustic Surveys**

Acoustic location methods are generally most applicable to waterlines or gas lines. A highly sensitive Acoustic Receiver listens for background sounds of water flowing (at joints, leaks, etc.) or to sounds introduced into the water main using a transducer. Acoustics may also be applicable to determine the location of plastic gas lines.

### **Thermal Imaging**

Thermal (i.e., infrared) imaging is a passive method for detecting the heat emitted by an object. Electronics in the infrared camera convert subtle heat differentials into a visual image on the viewfinder or a monitor. The operator does not look for an exact temperature; rather they look for heat anomalies (either elevated or suppressed temperatures) characteristic of a potential utility line.

The thermal fingerprint of underground utilities results from differences in temperature between the atmosphere and the fluid present in a pipe or the heat generated by electrical resistance. In addition, infrared scanners may be capable of detecting differences in the compaction, temperature and moisture content of underground utility trenches. High-performance thermal imagery can detect temperature differences to hundredths of a degree.

## **6.3 Intrusive Detection Surveys**

### **Vacuum Excavation**

Vacuum excavation is used to physically expose utility services. The process involves removing the surface material over approximately a 1' x 1' area at the site location. The air-vacuum process proceeds with the simultaneous action of compressed air-jets to loosen soil and vacuum extraction of the resulting

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debris. This process ensures the integrity of the utility line during the excavation process, as no hammers, blades, or heavy mechanical equipment comes into contact with the utility line, eliminating the risk of damage to utilities. The process continues until the utility is uncovered. Vacuum excavation can be used at the proposed site location to excavate below the "utility window" which is usually 8 feet.

### **Hand Excavation**

When the identification and location of underground utilities cannot be positively confirmed through document reviews and/or other methods, borings and excavations may be cleared via the use of non-conductive hand tools. This should always be done in conjunction with the use of detection equipment. This would be required for all locations where there is a potential to impact buried utilities. The minimum hand-excavation depth that must be reached is to be determined considering the geographical location of the work site. This approach recognizes that the placement of buried utilities is influenced by frost line depths that vary by geographical region. Attachment 2 presents frost line depths for the regions of the contiguous United States. At a minimum, hand excavation depths must be at least to the frost line depth (see Attachment 2) plus two (2) feet, but never less than 4 feet below ground surface (bgs). For hand excavation, the hole created must be reamed large enough to be at least the diameter of the drill rig auger or bit prior to drilling. For soil gas surveys, the survey probe shall be placed as close as possible to the cleared hand excavation. It is important to note that a post-hole digger must not be used in this type of hand excavation activity.

### **Tile Probe Surveys**

For some soil types, site conditions, and excavation requirements, non-conductive tile probes may be used. A tile probe is a "T"-handled rod of varying lengths that can be pushed into the soil to determine if any obstructions exist at that location. Tile probes constructed of fiberglass or other nonconductive material are readily-available from numerous vendors. Tile probes must be performed to the same depth requirements as previously specified. As with other types of hand excavating activities, the use of a non-conductive tile probe, should always be in conjunction with suitable utility locating detection equipment.

## **7.0 INTRUSIVE ACTIVITIES SUMMARY**

The following list summarizes the activities that must be performed prior to beginning subsurface activities:

1. Map and mark all subsurface locations and excavation boundaries using white paint or markers specified by the client or property owner.
2. Notify the property owner and/or client that the locations are marked. At this point, drawings of locations or excavation boundaries shall be provided to the property owner and/or client so they may initiate (if applicable) utility clearance.

Note: Drawings with confirmed locations should be provided to the property owner and/or client as soon as possible to reduce potential time delays.

3. Notify "One Call" service. If possible, arrange for an appointment to show the One Call representative the surface locations or excavation boundaries in person. This will provide a better location designation to the utilities they represent. You should have additional drawings should you need to provide plot plans to the One Call service.
4. Implement supplemental utility detection techniques as necessary and appropriate to conform utility locations or the absence thereof.

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5. Complete Attachment 3, Utility Clearance Form. This form should be completed for each excavation location. In situations where multiple subsurface locations exist within the close proximity of one another, one form may be used for multiple locations provided those locations are noted on the Utility Clearance Form. Upon completion, the Utility Clearance Form and revised/annotated utility location map becomes part of the project file.

## 8.0 REFERENCES

OSHA Letter of Interpretation, Mr. Joseph Caldwell, Attachment 4  
 OSHA 29 CFR 1926(b)(2)  
 OSHA 29 CFR 1926(b)(3)  
 TtNUS Utility Locating and Clearance Policy  
 TtNUS SOP GH-3.1; Resistivity and Electromagnetic Induction  
 TtNUS SOP GH-3.2; Magnetic and Metal Detection Surveys  
 TtNUS SOP GH-3.4; Ground-penetrating Radar Surveys

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# **ATTACHMENT 1** **LISTING OF UNDERGROUND UTILITY CLEARANCE RESOURCES**



**American Public Works Association**  
2345 Grand Boulevard, Suite 500, Kansas City, MO 64108-2625  
Phone (816) 472-6100 • Fax (816) 472-1610  
Web [www.apwa.net](http://www.apwa.net) • E-mail [apwa@apwa.net](mailto:apwa@apwa.net)

## **ONE-CALL SYSTEMS INTERNATIONAL CONDENSED DIRECTORY**

**Alabama**  
Alabama One-Call  
1-800-292-8525

**Alaska**  
Locate Call Center of Alaska, Inc.  
1-800-478-3121

**Arizona**  
Arizona Blue Stake  
1-800-782-5348

**Arkansas**  
Arkansas One Call System, Inc.  
1-800-482-8998

**California**  
Underground Service Alert North  
1-800-227-2600  
Underground Service Alert of Southern  
California  
1-800-227-2600

**Colorado**  
Utility Notification Center of Colorado  
1-800-922-1987

**Connecticut**  
Call Before You Dig  
1-800-922-4455

**Delaware**  
Miss Utility of Delmarva  
1-800-282-8555

**Florida**  
Sunshine State One-Call of Florida, Inc.  
1-800-432-4770

**Georgia**  
Underground Protection Center, Inc.  
1-800-282-7411

**Hawaii**  
Underground Service Alert North  
1-800-227-2600

**Idaho**  
Dig Line Inc.  
1-800-342-1585  
Kootenai County One-Call  
1-800-428-4950  
Shoshone - Benewah One-Call  
1-800-398-3285

**Illinois**  
JULIE, Inc.  
1-800-892-0123  
Digger (Chicago Utility Alert Network)  
312-744-7000

**Indiana**  
Indiana Underground Plant Protection  
Service  
1-800-382-5544

**Iowa**  
Iowa One-Call  
1-800-292-8989

**Kansas**  
Kansas One-Call System, Inc.  
1-800-344-7233

**Kentucky**  
Kentucky Underground Protection Inc.  
1-800-752-6007

**Louisiana**  
Louisiana One Call System, Inc.  
1-800-272-3020

**Maine**  
Dig Safe System, Inc.  
1-888-344-7233

**Maryland**  
Miss Utility  
1-800-257-7777  
Miss Utility of Delmarva  
1-800-282-8555

**Massachusetts**  
Dig Safe System, Inc.  
1-888-344-7233

**Michigan**  
Miss Dig System, Inc.  
1-800-482-7171

**Minnesota**  
Gopher State One Call  
1-800-252-1168

**Mississippi**  
Mississippi One-Call System, Inc.  
1-800-227-6477

**Missouri**  
Missouri One-Call System, Inc.  
1-800-344-7483

**Montana**  
Utilities Underground Protection Center  
1-800-424-5555  
Montana One Call Center  
1-800-551-8344

**Nebraska**  
Diggers Hotline of Nebraska  
1-800-331-5666

**Nevada**  
Underground Service Alert North  
1-800-227-2600

**New Hampshire**  
Dig Safe System, Inc.  
1-888-344-7233

**New Jersey**  
New Jersey One Call  
1-800-272-1000

**New Mexico**  
New Mexico One Call System, Inc.  
1-800-321-2537  
Las Cruces- Dona Ana Blue Stakes  
1-888-526-0400

**New York**  
Dig Safely New York  
1-800-862-7962  
New York City- Long Island One Call  
Center  
1-800-272-4480

**North Carolina**  
The North Carolina One-Call Center,  
Inc.  
1-800-632-4949

**North Dakota**  
North Dakota One-Call  
1-800-795-0555

**Ohio**  
Ohio Utilities Protection Service  
1-800-362-2764  
Oil & Gas Producers Underground  
Protect'n Svc  
1-800-925-0988

**Oklahoma**  
Call Okie  
1-800-522-6543

**Oregon**  
Oregon Utility Notification Center/One  
Call Concepts  
1-800-332-2344

**Pennsylvania**  
Pennsylvania One Call System, Inc.  
1-800-242-1776

**Rhode Island**  
Dig Safe System, Inc.  
1-888-344-7233

**South Carolina**  
Palmetto Utility Protection Service Inc.  
1-888-721-7877

**South Dakota**  
South Dakota One Call  
1-800-781-7474

**Tennessee**  
Tennessee One-Call System, Inc.  
1-800-351-1111

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### ATTACHMENT 1 (Continued)

**Texas**

Texas One Call System  
1-800-245-4545  
Texas Excavation Safety System, Inc.  
1-800-344-8377  
Lone Star Notification Center  
1-800-669-8344

**Utah**

Blue Stakes of Utah  
1-800-662-4111

**Vermont**

Dig Safe System, Inc.  
1-888-344-7233

**Virginia**

Miss Utility of Virginia  
1-800-552-7001  
Miss Utility (Northern Virginia)  
1-800-257-7777

**Washington**

Utilities Underground Location Center  
1-800-424-5555  
Northwest Utility Notification Center  
1-800-553-4344  
Inland Empire Utility Coordinating  
Council  
509-456-8000

**West Virginia**

Miss Utility of West Virginia, Inc.  
1-800-245-4848

**Wisconsin**

Diggers Hotline, Inc.  
1-800-242-8511

**Wyoming**

Wyoming One-Call System, Inc.  
1-800-348-1030  
Call Before You Dig of Wyoming  
1-800-849-2476

**District of Columbia**

Miss Utility  
1-800-257-7777

**Alberta**

Alberta One-Call Corporation  
1-800-242-3447

**British Columbia**

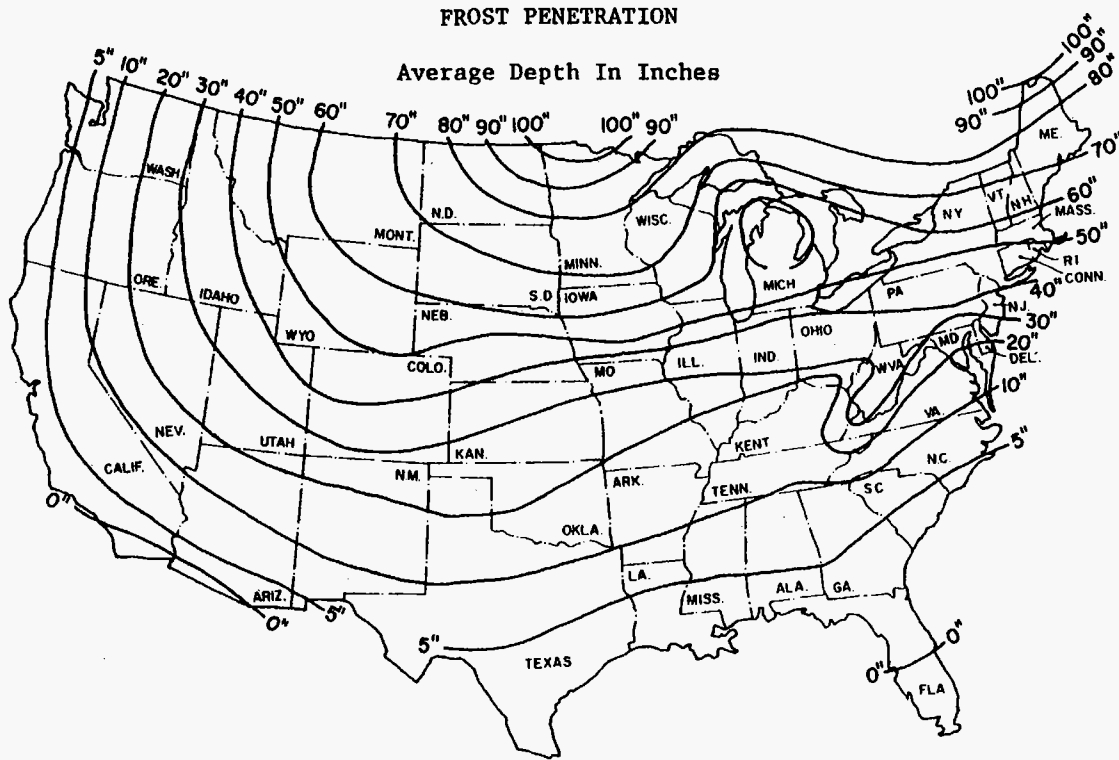
BC One Call  
1-800-474-6886

**Ontario**

Ontario One-Call System  
1-800-400-2255

**Quebec**

Info-Excavation  
1-800-663-9228

**ATTACHMENT 2****FROST LINE PENETRATION DEPTHS BY GEOGRAPHIC LOCATION**

Courtesy U.S. Department Of Commerce

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**ATTACHMENT 3  
UTILITY CLEARANCE FORM**

Client: \_\_\_\_\_ Project Name: \_\_\_\_\_  
 Project No.: \_\_\_\_\_ Completed By: \_\_\_\_\_  
 Location Name: \_\_\_\_\_ Work Date: \_\_\_\_\_  
 Excavation Method/Overhead Equipment: \_\_\_\_\_

1. Underground Utilities Circle One
- a) Review of existing maps? yes no N/A
- b) Interview local personnel? yes no N/A
- c) Site visit and inspection? yes no N/A
- d) Excavation areas marked in the field? yes no N/A
- e) Utilities located in the field? yes no N/A
- f) Located utilities marked/added to site maps? yes no N/A
- g) Client contact notified yes no N/A  
 Name \_\_\_\_\_ Telephone: \_\_\_\_\_ Date: \_\_\_\_\_
- g) State One-Call agency called? yes no N/A  
 Caller: \_\_\_\_\_  
 Ticket Number: \_\_\_\_\_ Date: \_\_\_\_\_
- h) Geophysical survey performed? yes no N/A  
 Survey performed by: \_\_\_\_\_  
 Method: \_\_\_\_\_ Date: \_\_\_\_\_
- i) Hand excavation performed (with concurrent use of utility yes no N/A  
 detection device)?  
 Completed by: \_\_\_\_\_  
 Total depth: \_\_\_\_\_ feet Date: \_\_\_\_\_
- j) Trench/excavation probed? yes no N/A  
 Probing completed by: \_\_\_\_\_  
 Depth/frequency: \_\_\_\_\_ Date: \_\_\_\_\_
2. Overhead Utilities Present Absent
- a) Determination of nominal voltage yes no N/A
- b) Marked on site maps yes no N/A
- c) Necessary to lockout/insulate/re-route yes no N/A
- d) Document procedures used to lockout/insulate/re-route yes no N/A
- e) Minimum acceptable clearance (SOP Section 5.2): \_\_\_\_\_

3. Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Approval:

\_\_\_\_\_  
 Site Manager/Field Operations Leader

\_\_\_\_\_  
 Date

c: PM/Project File  
 Program File

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#### ATTACHMENT 4 OSHA LETTER OF INTERPRETATION

Mr. Joseph Caldwell  
Consultant  
Governmental Liaison  
Pipeline Safety Regulations  
211 Wilson Boulevard  
Suite 700  
Arlington, Virginia 22201

Re: Use of hydro-vacuum or non-conductive hand tools to locate underground utilities.

Dear Mr. Caldwell:

In a letter dated July 7, 2003, we responded to your inquiry of September 18, 2002, regarding the use of hydro-vacuum equipment to locate underground utilities by excavation. After our letter to you was posted on the OSHA website, we received numerous inquiries that make it apparent that aspects of our July 7 letter are being misunderstood. In addition, a number of industry stakeholders, including the National Utility Contractors Association (NUCA), have provided new information regarding equipment that is available for this work.

To clarify these issues, we are withdrawing our July 7 letter and issuing this replacement response to your inquiry.

***Question:** Section 1926.651 contains several requirements that relate to the safety of employees engaged in excavation work. Specifically, paragraphs (b)(2) and (b)(3) relate in part to the safety of the means used to locate underground utility installations that, if damaged during an uncovering operation, could pose serious hazards to employees.*

*Under these provisions, what constitutes an acceptable method of uncovering underground utility lines, and further, would the use of hydro-vacuum excavation be acceptable under the standard?*

#### **Answer**

##### Background

Two sections of 29 CFR 1926 Subpart P (Excavations), 1926.651(Specific excavation requirements), govern methods for uncovering underground utility installations. Specifically, paragraph (b)(2) states:

When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours \* \* \* or cannot establish the exact location of these installations, the employer may proceed, provided the employer does so with caution, and provided detection equipment or other acceptable means to locate utility installations are used. (emphasis added).

Paragraph (b)(3) provides:



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#### ATTACHMENT 4 (Continued)

When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means. (emphasis added).

Therefore, “acceptable means” must be used where the location of the underground utilities have not been identified by the utility companies and detection equipment is not used.

Subpart P does not contain a definition of either “other acceptable means” or “safe and acceptable means.” The preambles to both the proposed rule and the final rule discussed the rationale behind the wording at issue. For example, the preamble to the proposed rule, 52 Fed. Reg. 12301 (April 15, 1987), noted that a 1972 version of this standard contained language that specified “careful probing or hand digging” as the means to uncover utilities. The preamble then noted that an amendment to the 1972 standard later deleted that language “to allow other, *equally effective means* of locating such installations.” The preamble continued that in the 1987 proposed rule, OSHA again proposed using language in section (b)(3) that would provide another example of an acceptable method of uncovering utilities that could be used where the utilities have not been marked and detection equipment is not being used – “probing with hand-held tools.” This method was rejected in the final version of 29 CFR 1926. As OSHA explained in the preamble to the final rule, 54 Fed. Reg. 45916 (October 31, 1989):

OSHA received two comments \* \* \* and input from ACCSH [OSHA’s Advisory Committee on Construction Safety and Health] \* \* \* on this provision. All commenters recommended dropping ‘such as probing with hand-held tools’ from the proposed provision, because this could create a hazard to employees by damaging the installation or its insulation.

In other words, the commenters objected to the use of hand tools being used unless detection equipment was used in conjunction with them. OSHA then concluded its discussion relative to this provision by agreeing with the commentators and ultimately not including any examples of “acceptable means” in the final provision.

#### Non-conductive hand tools are permitted

This raises the question of whether the standard permits the use of hand tools alone -- without also using detection equipment. NUCA and other industry stakeholders have recently informed us that non-conductive hand tools that are appropriate to be used to locate underground utilities are now commonly available.

Such tools, such as a “shooter” (which has a non-conductive handle and a snub nose) and non-conductive or insulated probes were not discussed in the rulemaking. Since they were not considered at that time, they were not part of the class of equipment that was thought to be unsafe for this purpose. Therefore, we conclude that the use of these types of hand tools, when used with appropriate caution, is an “acceptable means” for locating underground utilities.

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##### Hydro-vacuum excavation

It is our understanding that some hydro-vacuum excavation equipment can be adjusted to use a minimum amount of water and suction pressure. When appropriately adjusted so that the equipment will not damage underground utilities (especially utilities that are particularly vulnerable to damage, such as electrical lines), use of such equipment would be considered a "acceptable means" of locating underground utilities. However, if the equipment cannot be sufficiently adjusted, then this method would not be acceptable under the standard.

##### Other technologies

We are not suggesting that these are the only devices that would be "acceptable means" under the standard. Industry stakeholders have informed us that there are other types of special excavation equipment designed for safely locating utilities as well.

We apologize for any confusion our July 7 letter may have caused. If you have further concerns or questions, please feel free to contact us again by fax at: U.S. Department of Labor, OSHA, Directorate of Construction, Office of Construction Standards and Compliance Assistance, fax # 202-693-1689. You can also contact us by mail at the above office, Room N3468, 200 Constitution Avenue, N.W., Washington, D.C. 20210, although there will be a delay in our receiving correspondence by mail.

Sincerely,

Russell B. Swanson, Director  
Directorate of Construction

**NOTE:** OSHA requirements are set by statute, standards and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA's interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at <http://www.osha.gov>.

**ATTACHMENT V**

**EQUIPMENT INSPECTION CHECKLIST**

## EQUIPMENT INSPECTION CHECKLIST

Company: \_\_\_\_\_

Unit/Serial No#: \_\_\_\_\_

Inspection Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Time: \_\_\_\_\_:\_\_\_\_\_

Equipment Type: \_\_\_\_\_

(e.g, Drill Rigs Hollow Stem, Mud Rotary, Direct Push, HDD)

Project Name: \_\_\_\_\_

Project No#: \_\_\_\_\_

Yes	No	NA	Requirement	Comments
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Emergency Stop Devices</b> <ul style="list-style-type: none"> <li>Emergency Stop Devices (At points of operation)</li> <li>Have all emergency shut offs identified been communicated to the field crew?</li> <li>Has a person been designated as the Emergency Stop Device Operator?</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Highway Use</b> <ul style="list-style-type: none"> <li>Cab, mirrors, safety glass?</li> <li>Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use?</li> <li>Seat Belts?</li> <li>Is the equipment equipped with audible back-up alarms and back-up lights?</li> <li>Horn and gauges</li> <li>Brake condition (dynamic, park, etc.)</li> <li>Tires (Tread) or tracks</li> <li>Windshield wipers</li> <li>Exhaust system</li> <li>Steering (standard and emergency)</li> <li>Wheel Chocks?</li> <li>Are tools and material secured to prevent movement during transport? Especially those within the cab?</li> <li>Are there flammables or solvents stored within the cab?</li> </ul>	

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<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Power cable and/or hoist cable</b> <b>Hooks</b> <ul style="list-style-type: none"> <li>• Are the hooks equipped with Safety Latches?</li> <li>• Is the hook showing signs of wear in excess of 10% original dimension?</li> <li>• Is there a bend or twist exceeding 10% from the plane of an unbent hook?</li> <li>• Increase in throat opening exceeding 15% from new condition</li> <li>• Excessive nicks and/or gouges</li> <li>• Clips</li> <li>• Number of U-Type (Crosby) Clips (5/16 – 5/8 = 3 clips minimum) (3/4 – 1 inch = 4 clips minimum) (1 1/8 – 1 3/8 inch = 5 clips minimum)</li> </ul>	
<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Wire Rope (Hoist Mechanism)</b> <ul style="list-style-type: none"> <li>• Reduction in Rope diameter (5/16 wire rope &gt; 1/64 reduction nominal size -replace) (3/8 to 1/2 wire rope &gt; 1/32 reduction nominal size-replace) (9/16 to 3/4 wire rope &gt; 3/64 reduction nominal size-replace)</li> <li>• Number of broken wires (6 randomly broken wires in one rope lay) (3 broken wires in one strand)</li> <li>• Number of wire rope wraps left on the Running Drum at nominal use (<math>\geq 3</math> required) - Lead (primary) sheave is centered on the running drum</li> <li>• Lubrication of wire rope (adequate?)</li> <li>• Kinks, bends – Flattened to &gt; 50% diameter</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<b>Hemp/Fiber rope (Cathead/Split Spoon Hammer)</b> <ul style="list-style-type: none"> <li>• Minimum 3/4; maximum 1 inch rope diameter (Inspect for physical damage)</li> <li>• Rope to hammer is securely fastened</li> </ul>	
<input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>  <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Safety Guards –</b> <ul style="list-style-type: none"> <li>• Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact?</li> <li>• Hot pipes and surfaces exposed to accidental contact?</li> <li>• High pressure lines</li> <li>• Nip/pinch points</li> </ul>	

Yes	No	NA	Requirement	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Attachments</b> <ul style="list-style-type: none"> <li>Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? (Auger and drill rod pins and connectors)</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Operator Qualifications</b> <ul style="list-style-type: none"> <li>Does the operator have proper licensing where applicable, (e.g., CDL)?</li> <li>Does the operator, understand the equipment's operating instructions?</li> <li>Is the operator experienced with this equipment?</li> <li>Is the operator 21 years of age or more?</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>PPE Required for Drill Rig Exclusion Zone</b> <ul style="list-style-type: none"> <li>Hardhat</li> <li>Safety glasses</li> <li>Work gloves</li> <li>Chemical resistant gloves _____</li> <li>Steel toed Work Boots</li> <li>Chemical resistant Boot Covers</li> <li>Apron</li> <li>Coveralls Tyvek, Saranex, cotton) _____</li> </ul>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>Other Hazards</b> <ul style="list-style-type: none"> <li>Excessive Noise Levels? _____ dBA</li> <li>Chemical hazards (Drilling supplies - Sand, betonite, grout, fuel, etc.) <ul style="list-style-type: none"> <li>- MSDSs available?</li> </ul> </li> <li>Will On-site fueling occur <ul style="list-style-type: none"> <li>- Safety cans available?</li> <li>- Fire extinguisher (Type/Rating - _____)</li> </ul> </li> </ul>	

Approved for Use      ☐ Yes      ☐ No      ☐ See Comments

\_\_\_\_\_  
Site Health and Safety Officer

\_\_\_\_\_  
Operator